ašiihkiwi neehi kiišikwi myaamionki

EARTH AND SKY
THE PLACE OF THE MYAAMIAKI



Tim McCoy, George Ironstrack, Daryl Baldwin, Andrew J. Strack and Wayne Olm

Illustrations by Scott Shoemaker and Julie Olds

ašiihkiwi neehi kiišikwi myaamionki Earth and Sky: The Place of the Myaamiaki

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What you know of your heritage and culture, the language you learn, how you think about the land around you, how you know your family, and how you treat your elders, friends, and teachers, these things make up your identity as Myaamia people.

Akima Floyd Leonard

This book is the culmination of four years of work. It began in 2006 when the senior author started work on the Mars Exploration Rover Mission and had the opportunity to apply for supplemental funding for public outreach. We applied for and received funding from NASA to examine the earth and sky from a distinctly Myaamia perspective. That funding supplemented the generous funding provided by the Miami Tribe of Oklahoma to support the effort. In the summer of 2007, we held a day-long workshop during the National Gathering Week. In 2008, earth and sky was the focus of the Eewansaapita Summer Youth Experience in Miami, Oklahoma. Over the past three years, we also took field trips to Serpent Mound, mining sites in Oklahoma, Seven Pillars, the Forks of the Wabash, and Fort Wayne to examine the intersection between their cultural and geological history. Finally, lectures in Oklahoma, at Miami University in Ohio, and in Washington, DC presented our work to both adults and families. Through these efforts, we came to gain a new appreciation of how Myaamia people view the earth and sky. This book shares that view with Myaamia families.

This work would not have been possible without the financial support and encouragement of numerous individuals. We thank the Miami Tribe of Oklahoma and NASA for generous financial support. We recognize the contributions and support of our colleagues, Scott Doudrick (NASA Jet Propulsion Laboratory and Miami Tribe of Oklahoma), Aileen Yingst (University of Wisconsin-Green Bay), Mark Baranoski (Ohio Department of Natural Resources), Dani Tippmann (Miami Tribe of Oklahoma), Karen Baldwin, Lisette Torres (Miami University), the staff of the Baxter Springs Historical Museum, David Costa (Miami Tribe of Oklahoma Language Committee), the online user community of Stellarium, the Mars Exploration Rover Project, the staff and counselors of the 2008 Eewansaapita Youth Summer Experience, all the Myaamia students and families who attended our events, and our own families. We particularly express our gratitude for the unwavering support of the late Chief Floyd Leonard and current Chief Tom Gamble.

HOW TO USE THIS BOOK

iiši ayoonki ooniini wiintaakani

The *ašiihkiwi neehi kiišikwi* (Earth and Sky) curriculum is intended to be a family learning experience. It contains pieces that should appeal to younger children all the way up to the adults in the family. The curriculum is composed of four sections: an introductory section, an earth section, a sky section, and a concluding section. It is best for your family to follow these sections in the order they are presented. Carefully move through them step by step until you reach the conclusion.

Each section of the Earth and Sky curriculum contains a mixture of stories, home area learning activities, and site-specific location based modules. The curriculum is supported by interactive materials, including sound clips of words, an interactive map, and an interactive planetarium program, available at *myaamiaproject.org/earthandsky*.

The stories that open each section are new and were written especially for this curriculum by the authors of this curriculum. These stories appeal to all ages but are the elements that will appeal most easily to younger learners (3-6 years old). Throughout the curriculum they are marked with a yellow tab.

The home area learning activities are guides for adolescents, teenagers, and their parents to observe and experience *Myaamia* perceptions of the earth and the sky. The home area learning activities can be completed in your house, yard, or within walking distance of your house. These activities are marked with a blue tab throughout the curriculum.

The site-specific, location based lessons target older teenagers and the adults of the family; however, all age groups can enjoy them with help from the adults in the family. These lessons are focused on specific places in *Myaamionki* (the place of the Miami). These are places which all *Myaamia* people share some kind of connection and which the histories of our people and our places converge. To engage in these activities, the family can visit the sites directly by driving to the location (using the provided information), or the family could choose to visit the site virtually through the Google maps page that the authors created. These activities are marked with a red tab.

After finishing the Introductory, Earth, and Sky sections, the family can move on to the concluding section, *aacimotaatiiyankwi* (sharing stories with each other). In this section, the family is provided with two activities that ask you to review what you have learned. This section also provides a means for your family, collectively or as individuals, to share what you have learned with others. By telling your own stories about what you have experienced, your family can help enlighten and enliven the experiences of the rest of your bigger *Myaamia* family.

Nipwaahkaako! (Y'all take care and be wise!), Tim McCoy and George Ironstrack

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ašiihkiwi neehi kiišikwi EARTH AND SKY

In our history, we have called three places home—the Wabash River Valley in Indiana; lands in eastern Kansas; and northeastern Oklahoma. Together these form *Myaamionki*, the place of the Miami. Many Tribe members live in one of these places and many more have visited at some point in their life. You may be familiar with the lakes, rivers, forests, and fields that make up *Myaamionki*. But a place is more than just the surface of the land, it extends in all directions. Join us as we explore *ašiihkiwi* (Earth) and *kiišikwi* (Sky) of our homelands through the activities in this booklet. As you explore the landscape around you and the rocks that lie underfoot, you will learn about the landscape and rocks of *Myaamionki*, how they came to be, and how they appear at some of our most significant cultural sites.

Gaze at the sky and follow the cycles of the weather, Sun, Moon, stars, and planets as we have done for hundreds of years and learn how we still use these natural phenomena to mark time and to connect with the environment around us. This curriculum is designed for use across generations, in the same way in which *Myaamia* families have always explored our lands. For the youngest readers, we have illustrated stories, and, for our youth, there are activities to go out and explore your world. For the adults, we offer glimpses into important places where the history of *ašiihkiwi* and *kiišikwi* and the history of Miami people meet. Explore with us the place of the *Myaamia*—up, down, and all around.

ahkwaniswa neehi anikwa

YOUNG GIRL AND SQUIRREL



As winter ended, the thunder beings began to arrive. *Ahkwaniswa* (young girl), who lived in the city, decided to go camping in the woods far from the tall buildings and busy streets. Leaves were beginning to emerge.

Ahkwaniswa pitched her tent and soon fell fast asleep. It was not long before the croaking of the spring peepers woke up ahkwaniswa.

The spring peepers kept ahkwaniswa up all night!

In the morning, *ahkwaniswsa* went for a walk. She first met *anikwa* (squirrel). "Did you sleep well?" asked *anikwa*.

"No," said *ahkwaniswa*, telling *anikwa* about how the spring peepers kept her up all night.

While ahkwaniswa could hardly keep her eyes open, anikwa was wide awake and his tail twitched as he talked. Soon, ahkwaniswa walked off, still barely awake.

After a while, she came to a stream and laid down to rest. She was sleeping on the bank when along came anikwa again.

Anikwa had seen flowers in the prairie. He had watched a bird build its nest. He saw a mole digging on the river bank. He had watched the geese returning from the south. He had seen the full Moon last night. Anikwa told ahkwaniswa that she should look around.

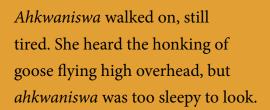


Ahkwaniswa decided she would have to find another place to rest. Ahkwaniswa walked along completely unaware of everything that was around her. Soon, ahkwaniswa ran straight into a cottonwood tree on the banks of the stream. Her head hurt.

Ahkwaniswa asked angrily, "why are you in my way?"

Cottonwood tree said, "I have grown here since your grandfather hiked these woods. You should walk more carefully through the forest. Look around!"

Anikwa, watching from the branches of the tree, laughed.



It was not long before a big pile of moss fell from the foot of goose and ... landed ... right ... on ... the head ... of ahkwaniswa.

Ahkwaniswa ran to the pond to wash the moss out of her hair. Soon, goose landed in the pond. Ahkwaniswa was very angry, but goose told her, "Look up!"

By now, anikwa was rolling on the ground laughing.



Ahkwaniswa was very grumpy by now. As she walked on through the forest, she hit her foot and it hurt badly. She had kicked a very large rock. "How did you get there?," asked ahkwaniswa.

"That is a story for another day, but I have been here since this land was a great prairie. You should look down ahkwaniswa," said rock. Finally, ahkwaniswa noticed anikwa laughing very loudly.

By now ahkwaniswa was grumpy. Her head and foot hurt. She smelled like wet moss. She walked back to her tent and slept. The next day, ahkwaniswa would listen to anikwa and look up, down, and all around.



LOOK UP, DOWN, AND ALL AROUND

aalaapilo peminkiši, mihtahkiši, miisaahaki

ACTIVITY 1

Materials Needed: Pencil Time: 20-30 minutes

Throughout these activities, we explore the world around you by looking up, down, and all around. In this activity, we'll just THINK about our world. Starting in Activity 2, we'll get to EXPLORE our world.

1) Let's get started by just listing some of the things that are part of where you live? Make a LIST OF 10 THINGS that are part of your world.

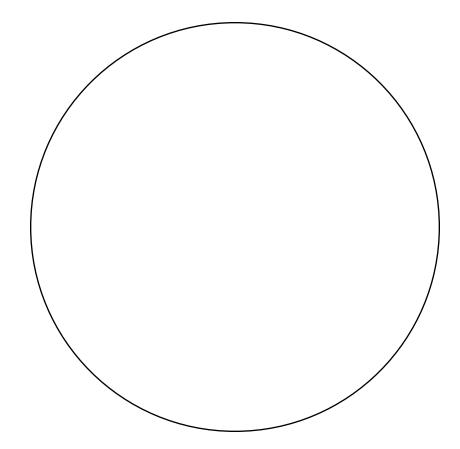
1.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

2) Did you list objects in your wiikiaami (house)? How about outside of your house? Did you list yourself? Are you part of Myaamionki? Here are a few ideas:

Little Bird pihcita Tree ahtawaani Chair naahkiipioni Dog alemwa Grass or Hay mihtahkatwi peetilaanki Rain Me niila

Can you think of others?

3) Write down your ten answers around the edge of the circle below.



- 4) Are these things related? For example, perhaps you wrote down tree and rain—does a tree need rain to grow? If so, draw a line between these two objects across the center of your circle. Do you need a tree to make a chair?
- 5) Keep drawing lines between all of the things that are related.
- 6) What does your drawing look like? It might end up looking like a spider web.

Throughout these activities we are going to explore *Myaamionki* and think about relations between the things we see. Maacaataawi! (Let's go!)

ašiihkiwi

EARTH

Ašiihkiwi (Earth) is essential to our life as Miami people. It has served as our place for generations; our ancestors knew their place in a deeply meaningful way. Our lands establish the rhythm of our interactions with plants and animals. We build upon the land, travel across it, and sometimes dig into it. Over the generations, wind, water, and humans have shaped and changed the land. In some places, the land has been transformed, while in others, the land has remained unchanged. Too often, we don't take the time to really look at the land. We see it as a blur out the window of a passing car rather than walking on the land and feeling it beneath our feet or in our hands. In this section, you will explore the land near where you live. You will also learn about what the land looks like in the places we call Myaamionki.

peepicinehkia neehi ahsena

MOLE AND ROCK



Not so long ago, peepicinehkia (mole) lived on the banks of the Mississinewa near Peru, Indiana. He spent his days on the edge of a prairie, tunneling beneath the tall grass. After a long day, as night began to fall, peepicinehkia was digging a new tunnel when he came across ahsena (rock).

Ahsena wasn't very special looking just an ordinary white ahsena buried in the earth. Ahsena was very large. Peepicinehkia didn't feel like digging around such a very large rock. He asked ahsena, "How did you get here, so deep in the ground?"

Ahsena, who hadn't spoken to anyone in a very long time, said, "My story starts long ago. I used to live beneath the water of an ocean, side-by-side with the shells and the fish. One day, I saw an otter dive down near me and pick up a rock. Soon, all of the water drained away and I found myself part of the land."



"I liked living above the water. Each day, the Sun would warm me and every night, the Moon and stars would shine brightly. Soon, grass and trees began to grow upon me. I could hear birds sing, thunder came each spring, and the snow fell each winter.

As each prairie and forest grew and then died, they formed a thick layer of earth over the top of me. It was dark beneath the soil, but it covered me like a warm blanket. I thought I might never see the Sun again."

"One day, rain began to fall. It started as a trickle and that trickle carried away some of the soil covering me. Each spring, when the thunder came and brought the rain, a little more earth would be carried away."



"It took many, many moons, but eventually a river formed. As the river grew year after year, it eventually carried away the rocks above me, below me, and all around me."



"I was part of a cliff and at the top of a cave. I still couldn't see the Sun, but I saw a new kind of light. A few times a year, a group of elder men—they called themselves *Myaamia*—would gather in the cave. They called the place aašipehkwa waawaalici (Seven Pillars). The fires they lit warmed me and I liked the sweet smell of the smoke."

"As the winters passed, the river changed. Settlers from the east came and cut down the forests to build towns on the banks of the river. Eventually, no more canoes came down the river and soon boats. making loud noises started coming up and down the river. Sometimes families would picnic beneath me. Then, the people stopped the water like beavers, with a large dam."

"Once a flood came and I was washed away from the roof of the cave, carried down the stream and buried beneath the soil."

Again, a prairie grew and it was beneath the prairie that ahsena and peepicinehkia first met.

Ahsena asked peepicinehkia to dig away the earth around him, so that he might once again see the Sun, Moon, and stars. Ahsena spent the next moons being warmed by the Sun each day and watching the stars twinkle at night.



One day, a group came to the edge of the prairie. They called themselves Miami. They spent the day picking milkweed and mulberries. Peepicinehkia heard the footsteps echoing in his tunnel. As dusk came, peepicinehkia came out to see ahsena.

About that time, a young Miami girl came over. Peepicinehkia ducked back in his tunnel, but he could see the box the girl was carrying. It said "ahsena myaamionkonci."

Peepicinehkia didn't know what that meant, but the girl got very excited when she saw ahsena. She picked up a small piece that had fallen from ahsena, running off yelling, "iinka! (Mom!), look what I found ..."

HOW THE SUN MOVES

iiši-aancihsaata kiilhswa

ACTIVITY 2

Materials Needed: None

Optional: 5 fist-size rocks, outdoor acrylic or latex paint in red, yellow, blue, black

Time: 15-20 minute periods repeated three times during a single day Hint: This activity can be done alone or with Activity 3 or Activity 6

When you go for a walk, how do you know what direction you are walking? Many people use the directions north, south, east, and west, but is that how we find our way within *Myaamionki*? Let's find out by watching how the Sun moves. Find a place in your yard where you can see in every direction. If possible, pick a place out of the way where you can mark the directions with rocks (or any other objects of your choosing) and leave the markings throughout the year. Place one of the rocks where you are standing. You will use the other four objects to mark the directions. If you want the direction markers to match the *Myaamia* colors, paint one of your fist-sized rocks yellow, one black, one blue, and one red and let them dry.

below: Directional stones around the base of a lamp post. The tall plant is scouring rush, a plant native to Myaamionki.



1) In the early part of the day, find the Sun (NOTE: Never look directly at the Sun, as it can damage your eyes.) Put one of the objects (the yellow rock, if you are using colored rocks) in the direction of the Sun from where you are standing. We call towards this direction awansaapiiciši—the direction of the rising Sun (eewansaapita). It is east.





2) Around noon, go outside your house and stand in the same place. Where is the Sun? The obvious answer is up and how high depends on the time of year. In winter, the Sun may be low in the sky and in summer, it will be high in the sky. But it won't be directly overhead. Put one of the objects (the blue rock) in the direction of the Sun from where you are standing. The direction towards the Sun at noon is called *maayaahkweeciši*. It is very similar to the word we use for noon maayaahkweeta. That's because the Sun is towards the south at noon.



- 3) If you face towards the Sun at noon, behind you is *pipoonahkionkiši*. Put one of the objects (the black rock) in the direction that is the opposite of the noon-day Sun. This word is similar to the word we use for winter—*pipoonwi*. pipoonahkionkiši is towards the north—the winter land.
- 4) Wait until the Sun is getting ready to set at the end of the day. What direction is the Sun? Put the last of the objects (the red rock) in the direction of the Sun from where you are standing. We call that direction *pankihšinkiši*—towards where the Sun sets.



By watching the Sun today, you've learned the directions we use to find our way through *Myaamionki*. If you leave the rocks in place, it will remind you of the *Myaamia* directions throughout the year.

In the next activity (#3), we'll begin to explore using those directions. In a later activity (#6), we'll learn more about tracking the time of day by watching the Sun.

Extension:

Try this activity near mid-summer and mid-winter using two sets of rocks. Make sure you stand in the exact same place both times and place the rocks towards awansaapiciši (east) as close to sunrise as possible and the rocks towards pankihšinkiši (west) as close to sunset as possible. Are the rocks in the same place? Are they in different places? Do you think the *Myaamia* directions were like points on a compass or were they more general directions that we move within *Myaamionki*?

LET'S GO FOR A WALK

pimpaalitaawi

ACTIVITY 3

Materials Needed: None

Time: 20-30 minute periods repeated four times over a day or week

Hint: This activity can be done with Activity 2

Now that we've found the Myaamia directions in Activity 2, let's go for a walk and explore the land around your wiikiaami (house). Make sure you tell an adult before you go or, better yet, get your family to come along. Take your dog and you'll all enjoy the time together. You don't have to walk very far—it can be as little as a block or as much as a few miles.

- 1) We'll start by walking awansaapiciši, toward the direction of the rising Sun (the yellow rock). Start at the center of the direction markers from Activity 2 and walk. What do you see around you? Make sure to look up, down, and all around. To get ready for Activity 4, pick up two rocks along the way. Dried up stream beds are a great place to look for rocks. When you get back from your walk, answer the questions below.
- 2) Great walk! Did you enjoy it? What did you see? Maybe you went over aciwi (a hill), past miincipahki (a field of corn), or crossed over meehcaakamihsi (a stream). Did you see any birds? What were the trees like this time of year? Were the flowers blooming? Was it hot or cold? Take a few minutes and write down a few of the things you saw on your walk.

3) Rested up from your last walk? Now let's walk maayaahkweeciši, toward the
direction of the Sun at noon (the blue rock). Don't forget to pick up two more
rocks this time. Again, you will answer a few questions when you get back from
your walk.

4) What did you see on this walk? Mayb	be you walked by <i>nipihsi</i> (a pond).
Did you see <i>tapaahsia</i> (a goose)? What v	vas different from what you saw walking
awansaapiciši? Do you think it was beca	use of the direction you walked or, maybe
the time of day you took your walk? Let's	s write down a few of the things we saw.

- 5) Now let's walk pipoonahkionkiši (the black rock), towards the winter land (although if you start walking in summer, you probably won't make it to where there is snow!). Don't forget to pick up two more rocks. Again, I'll ask a few questions when you get back from your walk.
- 6) What was different in this direction? You probably passed a wiikiaami (house). Did you see anikwa (a squirrel) or waapanswa (a rabbit) on your walk? Let's write down a few of the things we saw.

7) Now let's walk pankihšinkiši past the red rock towards the direction of the setting Sun. Don't forget to pick up two more rocks this time. Try this walk at the end of the day if you can. Again, I'll ask a few questions when you get back from your walk.

8) What was different in this direction? If you went out in the summer when the
Sun sets, you might have seen wihkweeliihsia (a bat), apeehkwa (a nighthawk), or
waawaahsamwa (a firefly). Let's write down a few of the things we saw.

9) Now you should have a pretty good idea of what is around your house. You've walked all four directions and looked up, down, and all around. You picked up eight rocks on your walks—two from each direction. Let's go to the next activity to learn more about our rocks.

Extension:

The world around us goes in cycles. You are probably familiar with some of these, like the trees sprouting leaves in the spring and losing leaves in the fall. Some you have to look more carefully to see, like birds that you only see at certain times of the year. Go on these same walks throughout the year. You can go once a month or once each in spring, summer, fall, and winter. Look up, down, and all around and see how the land changes. Make sure each time to write down what you see. How does it change? What plants or animals do you see only at a certain time of year?

ROCKS

ahsena

ACTIVITY 4

Materials Needed: Pencil Time: 15-20 minutes

Now that you've collected eight rocks, let's take a careful look at them. Lay them in a row and we are going to look at each one and ask:

- Is the rock big or small?
- Is it light or heavy?
- Is it round or jagged?
- Is it smooth or rough?
- Is it white, gray, black, or some other color?

Write down your answers here:

Rock #	Big or Small	Light or Heavy	Round or Jagged	Smooth or Rough	What Color
1					
2					
3					
4					
5					
6					
7					
8					

Are all the rocks the same kind or are they different? How many different kinds of rocks did you collect?

Turn to the next page to see the kinds of rocks found in Myaamionki. Don't worry about figuring out the exact names for your rocks. You may have found rocks that aren't normally found in *Myaamionki*. Some of the rocks you may have found may have been used to make roads. These rocks can come from far away. Sometimes rocks from far away arrive naturally. If you live in the Midwest, you often find oddlooking rounded rocks. They don't look like any of the rocks on the next few pages. These rocks may have been carried by glaciers that covered the Midwest long ago. You never know what kind of rock you'll find—that's why looking at rocks is so fun!

ROCKS FROM MYAAMIONKI

ahsena myaamionkonci



waapahsena—a smooth, often jagged, white rock, it is very common throughout *Myaamionki*. You can test your rock to see if it is waapahsena. With the help of an adult, scrape a little bit of the rock into powder and put a few drops of vinegar on it. If it fizzes, you have waapahsena.

(English: Limestone or Dolomite)

Connect this rock to Seven Pillars (page 30)



eehsahsena—any rock with a shell in it is called eehsahsena. These fossils are most commonly found in waapahsena, but occasionally in other types of rocks.

Connect this rock to Seven Pillars (page 30)



peepankihšileeta ahsena—a rock which has smooth, flat surfaces, has distinctive layers like a deck of cards, and is usually gray. It is common throughout Myaamionki.

(English: Shale)

Connect this rock to Emerging Land (page 32)



mahkateewi—a lightweight, usually black rock that is almost glassy to the touch and often displays layers. It is usually found with peepankihšileeta ahsena.

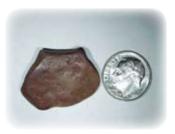
(English: Coal)

(English: Sandstone)

Connect this rock to Kansas: Coal and Oil (page 38)



kaayohsena—rough to the touch, it sometimes exhibits layers (as in this example), and ranges in color from brown to white. It is very common throughout *Myaamionki*.



ahsenintehsi—any small, generally smooth rock. The example shown here was picked up in its original size and has not been broken. The name simply means small rock. (English: Pebble—generic)



wiipici—a rock that feels smooth to the touch, but forms sharp edges when broken. It is often found as loose rocks, especially in stream beds. It is very common throughout *Myaamionki*. It was used to make arrowheads (wiipica). (English: Chert/Flint)

Connect this rock to Forks of the Wabash (page 36)



wiilinwahseni—usually white to pink, it is slightly rough to the touch and very hard. The name translates as "rock that looks like meat fat" and it has a fatty sheen to it. It will scratch glass (but ask an adult first!). It is very common around Indiana, but rare in Kansas and Oklahoma. (English: Quartzite and Granite).

Connect this rock to Miami University (page 43)



ahsenipi—this describes the gray crystals seen at the bottom of this rock. It was mined in northeastern Oklahoma and pieces can still be found there. It is rare in other parts of *Myaamionki*. (English: Lead)

Connect this rock to Oklahoma: Lead (page 41)

(English: Blue Clay)



iihkipakaamhkiiki—you probably wouldn't collect this as a distinct rock. It is blue-gray in color, very soft, and layered.It is found in distinctive layers around Indiana.This particular piece was carefully collected and dried.

EARTH AND SKY: THE PLACE OF THE MYAAMIAKI 27

Extension:

What do these rocks all have in common? How did they form? Let's think a little about each one:

- waapahsena forms in oceans.
- The animals that made the shells found in *eehsahsena* lived in shallow oceans.
- peepankihšileeta ahsena is solidified mud from the shallow oceans that was compacted and existed long ago.
- *mahkateewi* formed from plants that lived long ago—plants that needed water.
- *kaayohsena* is made up of sand deposited on beaches by ancient oceans.
- ahsenintehsi are often rounded by water from streams.
- wiipici formed on ancient seafloors.
- Some willinwahseni started as kaayohsena, before being heated and changed. Most wiilinwahseni was carried to Myaamionki by glaciers long ago.
- ahsenipi was formed by water that flowed through cracks in rocks.
- iihkipakaamihkiiki was formed along ancient beaches, often in between layers of peepankihšileeta ahsena.

Oceans, rivers, beaches—what do these all have in common? Do you get wet when you go to these places? Of course, they all have water! What else depends on water? Think back to the things you saw on your walks in Activity 3. How many of those need water now or needed water to form? Can you think of anything around you that didn't need water in one way or another?

Water plays an important role in our culture. Rivers define the heartland of our traditional homelands and our name *Myaamiaki* means the "downstream people." Can you think of other important roles for water in our culture?

SEVEN PILLARS

aašipehkwa waawaalici

Aašipehkwa Waawaalici (Seven Pillars) has been a gathering spot for *Myaamia* people for countless generations. Located on the Mississinewa River near Peru, Indiana, Seven Pillars can be easily reached by canoe from throughout the Wabash River Valley. Miami councils gathered at and within the caverns of the "stone cliff with caves" long before European contact. In 1967, the U.S. Army Corps of Engineers constructed a dam to form Lake Mississinewa upstream of Seven Pillars.



Designed to prevent floods, the dam also greatly changed the character of the river. The Seven Pillars was perhaps preserved by the dam, but the flooding produced upstream from the dam put many other Myaamia sites under water. Today, Myaamia people continue to gather at Seven Pillars to reflect upon our past in this special place and to celebrate our present and future. The unique character of Seven Pillars owes its existence to the geology of this area. Limestone was deposited in this area about 425 million years ago during a period geologists call the Silurian. Rare seashell fossils, like the one shown here, testify to the fact that the limestone was deposited in a shallow ocean long ago.

Limestone is composed of calcium carbonate, but groundwater flowing through the rocks transformed part of the rock to dolomite—a calcium magnesium carbonate—and produced chert nodules. The rocks are thinly-bedded, producing numerous horizontal fractures in the rocks. They are also fractured vertically, a process geologists call



jointing. It is this unusual combination of horizontal and vertical fractures that produced the pillars and caverns at aašipehkwa waawaalici.

As both groundwater and water from the Mississinewa penetrated along the fractures, they dissolved away and removed part of the rock, producing the unique structure. Even today, water seeps from between the cracks in the rocks, and it is likely that continued erosion will someday cause one or more of the pillars and caverns to crumble into the river.



left: View across the Mississinewa River to Seven Pillars.

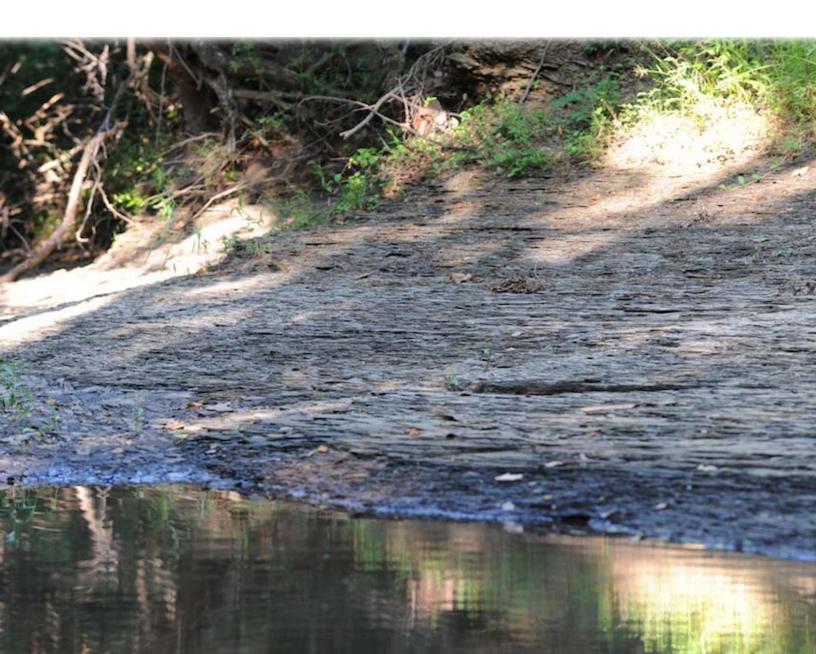
For more information, photos, and directions from any location, visit the interactive Google Map under the downloads tab at: myaamiaproject.org/earthandsky.



EMERGING LAND

ašiihkiwi moohkiiki

Water holds a special significance in the history of the *Myaamia* people. Some of our oldest stories tell of the land emerging from the water. Our "Coming Out" story tells of *Myaamia* people coming to the top of the water, grabbing the tree branches to pull themselves up, and coming onto the land. You can read "Where the Myaamia First Came From" on page 52 of the book *Myaamia neehi Peewaalia Aacimoona neehi Aalhsoohkaana* (Myaamia and Peoria Narratives and Winter Stories).



After emerging onto *Myaamionki*, our ancestors used rivers as pathways to build villages, create links with other villages, and establish trade networks with neighboring communities. The earliest maps made by *Myaamia* people were maps of rivers, for it was these rivers that connected us as a people. Water nourishes us and gives life to our lands and all the plants and animals with whom we share our places. During one of the saddest periods of our history, the forced removal west of the Mississippi, our people were taken from their homelands along rivers and canals filled with the waters of *Myaamionki*. Throughout our history, all of the places we settled were centered near rivers, from the Wabash in Indiana to the Marais des Cygnes in Kansas to the Neosho in Oklahoma. For countless generations, water has sustained us.

Throughout *Myaamionki* there is evidence that the land did indeed emerge from the water. Along Four Mile Creek north of Miami, Oklahoma, layers of dark, platy shale are exposed along the banks. These rocks were not formed by Four Mile Creek. Instead, these rocks preserve the ancient mud deposited in a shallow sea some 320 million years ago during a time geologists call the Mississippian. Each layer was deposited on top of the previous layer, so that the oldest rocks are on the bottom and the youngest are on top. Shale and other rocks that geologists call sedimentary rocks are common in Indiana, Kansas, and Oklahoma. They include limestones, sandstones, and shales—all formed in ancient oceans. Without water, there wouldn't be *Myaamionki!*



left: Layered shale along Four Mile Creek near Miami, Oklahoma.

For more information, photos, and directions from any location, visit the interactive Google Map under the downloads tab at: myaamiaproject.org/earthandsky.

THE CONFLUENCE OF THE MAUMEE

saakiiweeki taawaawa siipiiwi

The headwaters of the *taawaawa siipiiwi* (Maumee River) have been central to the *Myaamia* people for centuries. At this location, the *kociihsasiipi* (St. Joseph) and *nameewa siipiiwi* (St. Mary's) rivers converge to form the Maumee, which flows to the northeast towards Lake Erie. A few miles south of this point along the St. Mary's River was a path that led to the *pwaawikamisiipi* (Little Wabash River) and the *waapaahšiki siipiiwi* (Wabash River). This path, often called a portage, was used to carry canoes and trade goods from the Maumee to the Wabash River. It was the only significant portage between the French colonial cities of Montreal and New Orleans.

Myaamia people controlled that portage for generations, and today Ft. Wayne remains the home of many *Myaamia* families. Although the confluence of the Wabash looks little like it did centuries ago, the rivers flow as they have for countless generations. Long before *Myaamia* people moved to this location, the forces of ice and water sculpted this place.

Nearly 70,000 years ago, ice covered this region, extending from what is now Lake Erie all the way to the Illinois-Indiana border. As it advanced, it scoured the land and moved great piles of rock and earth. These piles, called glacial moraines, still dot the landscape of the Midwest.



One of these, called the Ft. Wayne Moraine, cuts across the city of Ft. Wayne. About 14,000 years ago, the Ft. Wayne moraine contained a massive sheet of ice that stretched to Canada. As that ice melted, the Ft. Wayne Moraine acted as an earthen dam, holding back the melt water. Eventually, the moraine gave way and broke in two spots—the Ft. Wayne sluiceway and Trier Ditch (shown by blue arrows). A torrent of water poured through for weeks, draining into the Eel River and the Wabash. Eventually, the water subsided. As the glacier continued to melt, the water flowed to the northeast, forming the Maumee River. The sediments left behind by the ancient lake came to form the Great Black Swamp and the fertile soils northeast of Ft. Wayne.

When Myaamia people first settled at the confluence of the St. Joseph and St. Mary's Rivers, they recognized the significance of the shape of the rivers and the land. The outcomes of this ongoing geological story provided an ideal location to move trade goods from the northeast to the southern coast of North America. In addition, the fertile soil of the river bottomland and the surrounding Great Black Swamp provided ample space for farming, a great environment for edible tuberous plants, and an attractive home for many animals that the Myaamia hunted.

left: View from the Columbia Avenue Bridge in downtown Ft. Wayne. At this point, the St. Joseph River and St. Mary's River converge to form the Maumee River, which flows under the bridge.

below right: View of the Ft. Wayne Moraine looking across Trier Ditch in southern Ft. Wayne.





above: Digital elevation map of Ft. Wayne, Indiana. Brown areas are higher elevation, green areas are lower elevation. Red lines are Interstates 69 and 469. Black lines show the boundaries of the Ft. Wayne Moraine. Blue arrows show where water breached the Ft. Wayne moraine, flowing to the west into the Wabash River. Eventually, the flow subsided and continued melting, formed the Maumee River, and drained to the northeast (green arrow) to Lake Erie.

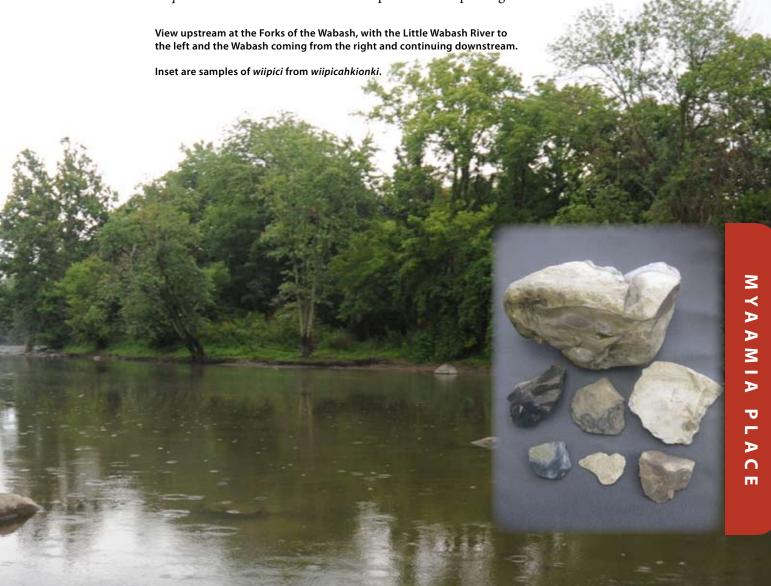
FORKS OF THE WABASH

wiipicahkionki

Wiipicahkionki (The Forks of the Wabash) has long been an important place for the Myaamia people. Literally, "the flint place," wiipicahkionki has served as a source of flint for daily and ceremonial activities. Wiipicaki (arrowheads) made of wiipici (chert and flint) have been found and collected at the Forks. Upstream from the Forks along the Little Wabash, an overland portage leads to the St. Mary's River, the Maumee River, and Lake Erie. Downstream from the Forks, the Wabash flows to the Mississippi and the Gulf of Mexico. In the early 1800s, encroachment by the United States upon the homelands of the Myaamia gave rise to a new purpose for the Forks of the Wabash.



As a site for treaty negotiations, land cessions in 1834 and 1840 were conducted at the Forks of the Wabash. Today, it remains an important gathering place for *Myaamia* people. *Wiipicahkionki* owes its name to the abundant *wiipici* that is still found on its shores and was once dug from pits on its banks. Fine-grained, silica-rich rocks, *wiipici* occurs as nodules within the limestone that forms much of northeastern Indiana. As the limestone weathers away, layers and nodules of *wiipici* are separated and carried downstream by the river. As the fast-flowing Little Wabash River enters the deeper, slower-moving Wabash, the *wiipici* being carried by the Little Wabash settles to the bottom and forms gravel banks. It is within these gravel banks that you can still collect white and grey *wiipici*, the prized black flint, and even larger boulders in which the *wiipici* is still partially encased in limestone. These rocks break to form sharp edges, making them ideal for knives, scrapers, and arrowheads. Heating them in fires and rapidly cooling them in cold water makes the *wiipici* and flint even more brittle and produces sharper-edged tools.



KANSAS: COAL AND OIL

waapankiaakamionki: mahkateewi neehi pimi

After forced removal from Indiana, the Myaamia Tribe was relocated to reserve lands in Indian Territory in 1846. These were tumultuous times for both the *Myaamia* Tribe and their new home. By 1854, the Kansas-Nebraska Act created the territories of Kansas and Nebraska, opened new lands to settlement, and, most notably, allowed the citizens of those territories to vote whether to be a free or slave state.

This legislation produced a violently tense conflict in the new Territory often called "Bleeding Kansas." In 1858, pro-slavery forces captured eleven free-state men and massacred five along the Marais des Cygnes, a spot within the pre-allotment *Myaamia* lands in Kansas. By 1861, the Civil War plunged much of the country into violence.

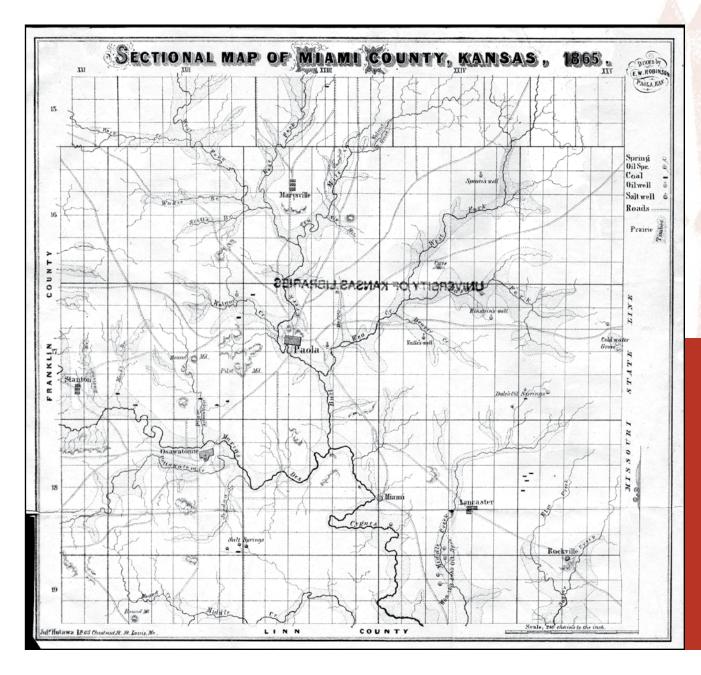
At the same time, railroads pushed further west, bringing new settlers into Indian Territory, and increasing the pressure for new land. The railroads themselves required land for lines that would cross the continent. Under the force of all these pressures, the Myaamia Tribe was relocated in the 1870s to the northeast corner of Indian Territory, what would later become the state of Oklahoma.

Less apparent in the history of our people is that the geology of the Kansas reserve may have played a significant role in the second removal of the Myaamia Tribe. At the time of the first removal in 1846, wood from eastern forests was the main fuel for both home and industrial use. As the rail lines pushed westward onto the treeless prairies, wood became too heavy to carry west with the locomotives. A lighter, hotter-burning fuel was needed and mahkateewi (coal) and pimi (oil) were the fuels of choice.

Mahkateewi and pimi had long been known to be near the Myaamia reserve in what would become Miami and Linn counties in Kansas. It was the presence of *mahkateewi* and *pimi* that attracted the attention of Kansas state geologist George C. Swallow, who published his Report of the Geological Survey of Miami County, Kansas in 1865. *Mahkateewi* had been mined from the surface for years, primarily for use by blacksmiths. Swallow reported that the mine on Sugar Creek in southern Miami County was selling

coal for 25 cents per bushel. Although the extent of the mahkateewi seams was unknown, Swallow speculated that they were of likely economic value.

In Myaamia, mahkateewi is also translated as "gun powder." While both are black powders that burn, they are both also repositories of stored energy. For mahkateewi (coal), that energy comes from the Sun. The Sun allowed ancient plants to grow that were then compressed into mahkateewi long ago. In some mahkateewi beds in southern Kansas, you can still find the fossils of those plants preserved.





The existence of *pimi* reserves had long been evidenced by oil and tar springs occurring along rivers in Miami County. One set of these springs, labeled "Won-Zop-Peah's oil springs" occurred along Middle Creek in southern Miami County and were undoubtedly named for the *Myaamia* citizen *Awansaapia*. Swallow wrote that the oil seeps were "sufficient to convince anyone familiar with the indications and developments of petroleum in the productive oil regions of the country, that it must exist in large quantities in this county." It was along Wea Creek near Paola

that the first well in search of oil was drilled in 1860, only a year after the first well in the United States in Pennsylvania.

The importance of *mahkateewi* and *pimi* reserves in the early history of the *Myaamia* is reinforced by the fact that the town of LaCygne was founded in 1869, as soon as the locals were assured that the St. Louis & San Francisco railroad would pass this location. It seems likely that the pressure for tribal lands exerted by settlers was matched by pressure for mineral resources underneath those lands.

Today, *mahkateewi* continues to have a major influence on the Miami reserve lands in Kansas. The last operating coal mine in Kansas is in southern Linn County and it supplies *mahkateewi* to the Kansas City Light and Power coal-fired power plant on LaCygne Lake. That power plant dominates the landscape of the old Kansas reserve and is the largest employer in the county. The 2,600 acre lake created to cool the power plant both flooded some *Myaamia* family allotments and preserved others in 2,000 acres surrounding the lake, now managed by the Kansas Department of Wildlife and Parks.

above: View across LaCygne Lake to the Kansas City Light and Power LaCygne Power Plant.

For more information, photos, and directions from any location, visit the interactive Google Map under the downloads tab at: myaamiaproject.org/earthandsky.

OKLAHOMA: LEAD

noošonke siipiiwi: ahsenipi

Myaamia people have known of ahsenipi (lead) since at least the earliest contact with Europeans. It would come to play a more prominent role in the history of the Myaamia people living in Oklahoma. The rocks beneath the corner of Oklahoma, Kansas, and Missouri are sedimentary rocks (limestones and cherts) deposited during what geologists call the Mississippian period 320 million years ago. When they formed, fluids flowed through fractures in the rock and left behind the lead sulfide mineral galena and the zinc sulfide mineral sphalerite, along with iron sulfide.

Starting around 1890, *ahsenipi* and zinc mining would become one of the major industries in the area and remain so until 1970. This area produced ten percent of the country's *ahsenipi* and fifty percent of the country's zinc. The zinc mined in the area was essential to the galvanization process that protects iron metal from rusting. Underground mines were common around Miami, Oklahoma, particularly to the north of town. These mines were often on tribal lands, particularly of the Quapaw. Many *Myaamia* Tribe families had members who worked deep underground with the difficult task of drilling, blasting, and hauling the lead and zinc ore to the surface, where it was refined. Elders recall these as good paying jobs and take pride in the fact that much of the *ahsenipi*, in particular, went to make bullets that helped win World War I and World War II.

The area around Picher, Oklahoma also produced some of the finest specimens of galena and sphalerite ever collected. The Picher Mining Museum became world-famous among mineral collectors for its fine collection of specimens, photos, and artifacts. Today, that collection is housed in the Baxter Springs Historical Museum just across the state line in Kansas.

right: Cubes of galena collected from the Tri-State leadzinc mines near Picher, Oklahoma. (Photo courtesy of Smithsonian Institution)



Today, the mining era has left an indelible mark on Miami, Oklahoma, both for better and worse. Some of the grandest buildings in Miami were built by the mine owners. The historic Coleman Theatre, where performances have been held during National Gathering Week, dates back to 1929. The Gordon House, now newly-renovated and owned by the Miami Tribe of Oklahoma, likewise dates to the early 1900s.

In contrast to these magnificent structures, the areas to the north of Miami are dotted with massive piles of chat—small chips left over after mining—that are contaminated with heavy metals. Likewise, the pumps that once kept water out of the mines have fallen silent and that water now flows into local streams.

Tar Creek, now lifeless and contaminated with *ahsenipi*, zinc, and other heavy metals, owes its red color to the iron liberated from the iron sulfides and combined with oxygen to form rust when it reaches the surface.







Ahsenipi—as bullets, minerals, in mines, and as a health hazard—has been a constant force in the history of our people. Today, our Tribe is actively engaged in protecting our people from the health hazards posed by the remnants of mining, while also engaging in preserving the magnificent buildings from the period.

For information on the Baxter Springs Historical Museum, visit baxterspringsmuseum.org.

For information on the Historic Coleman Theatre, visit colemantheatre.org.

top: Coleman Theatre in Miami, Oklahoma.

middle: Chat piles near Picher, Oklahoma. This pile of small chips left over from lead and zinc mining rises more than 100 feet above the surrounding area.

bottom: Tar Creek runs red with oxidized iron from the breakdown of sulfides carried in water flowing from the abandoned lead and zinc mines.

myaamia mihši-nipwaantiikaani

Founded in 1809, Miami University in Oxford, Ohio began holding classes in 1824. Founded within *Myaamionki* on land relinquished through the Treaty of Greenville, Miami University was named for the river valley that defines the region. This valley and its central river, the Great Miami River, were so named because it was a route used to reach the *Myaamia* living along the Wabash. Indirectly then, Miami University draws its name from the *Myaamia* people. Located only a few miles from the Miami-Erie canal, classes were likely being held at Miami University when canal boats carrying *Myaamia* people passed through the area during the 1846 forced removal.

In the 1970s, Miami Tribe leaders returned to the region and began establishing a long and beneficial relationship with Miami University. Since 1991, Miami University has sponsored the Heritage Award for Tribe students, covering tuition and instructional fees. This award has allowed more than sixty tribal students to attend Miami University. The university also hosts the Myaamia Project, the research effort for language and cultural revitalization of the Miami Tribe of Oklahoma. As Miami University celebrated its bicentennial, it sought out various ways to recognize the Miami Tribe's connection to the place on which the university rests and the many friendships that have been shared between tribal members and university faculty and students.

One of the most striking of these recognitions was the opening of the exhibit *myaamiaki iši meehtohseeniwiciki: How the Miami People Live* at the Miami University Art Museum. This remarkable exhibit brought together objects from museums and artists around the country and combined these with words and pictures to recount the history of our people and vividly share who we are today. Visit the exhibit at *myaamiaexhibit.com*.



While Miami University has a special place in the life of the Miami Tribe of Oklahoma, it also offers a unique perspective on the geology of the region. Most of the buildings on the main campus are man-made red brick. However, the character of the buildings changes dramatically on the Western campus. Here, the buildings are waapahsena (limestone) with slate roofs.

Far more impressive are the stone bridges. Built in the first half of the 1900s, the stone bridges replaced earlier wooden ones. The stones were hand-selected by builder Cephas Burns from local streams. Most of the stones are durable wiilinwahseni (granites and quartzites). These rocks were carried into the area by glaciers thousands of years earlier. As there are no local outcrops of these rocks, these bridges are the finest example of this rock in Myaamionki.

For more information, photos, and directions from any location, visit the interactive Google Map under the downloads tab at: myaamiaproject.org/earthandsky.

kiišikwi

S K Y

The land of *Myaamionki* changes constantly. It is reshaped by the rain and wind, carved by the rivers, and transformed by humans. While the land changes, *kiišikwi* has remained untouched for countless generations. The *Myaamia* people have watched *kiilhswa* (Sun) cross *kiišikwi* during the day, followed by *tipehki kiilhswa* (Moon) as it grows and then shrinks each month. We marked the seasons with the passing of the moons and gazed upon *alaankwaki* (stars). All the while, we have also watched the land around us, linking the sky and earth through the cycles of the year. In this section, we will continue this *Myaamia* tradition of following *kiišikwi*.

waawaahsamwa neehi kiilhswa

FIREFLY AND MOON



One summer evening, as it grew dark, the crescent *kiilhswa* (Moon) was high in the sky. *Kiilhswa* looked down and saw little *waawaahsamwa* (firefly) sitting on a milkweed.

"Waawaahsamwa," said kiilhswa,
"that's a beautiful light. Perhaps
you'd like to play some games
with our lights." Waawaahsamwa
accepted and the games began.

On the first night, they decided to see who could carry their light higher in the sky. *Kiilhswa* easily carried its light high overhead into the Milky Way. Try as it might, *waawaahsamwa* couldn't go that high.

The next night, they decided to see who could glow the longest. Kiilhswa easily glowed for hour after hour. Waawaahsamwa tried as hard as he could, but west wind blew waawaahsamwa around so that he had to work so hard to fly that he couldn't keep his glow.

By now, waawaahsamwa was becoming very sad and he turned to alaankwa (star). "Alaankwa," said waawaahsamwa, "you are very high like kiilhswa, but I cannot carry my light as high or glow as long as kiilhswa."

Alaankwa had once played with kiilhswa. "Although I was very high," said alaankwa, "I am very small and west wind blew me around as well. Kiilhswa is very big and very strong and west wind cannot blow kiilhswa. You must be patient. You will soon see that you can beat kiilhswa."





The next night, waawaahsamwa challenged kiilhswa to see who was brighter. Each night, kiilhswa grew and grew until it was full and bright and lit the ground. Now, waawaahsamwa was sure there was nothing he could do better than kiilhswa. But alaankwa knew better.

The next night, waawaahsamwa came out at dusk and started to flash. But on this night, kiilhswa did not come out to play at dusk. When he did come out, kiilhswa was smaller and darker. Although he had grown full, his light was dying.

"See," said *alaankwa*, "I told you that there was something you could do better than kiilhswa. While he might climb higher and glow longer or brighter sometimes, you can flash every night, just like I do."

Each night, kiilhswa came out later and later and got smaller and smaller until one night, he did not come out at all.

All night, waawaahsamwa flashed and alaankwa twinkled and all of the other waawaahsamwa and alaankwa came out to play. You couldn't tell where ašiihkiwi stopped and kiišikwi started.



Waawaahsamwa, kiilhswa, and alaankwa decided that during the summer, waawaahsamwa and alaankwa would be the brightest at dusk half the month, and kiilhswa would be the brightest at dusk during the other half.

To this day, waawaahsamwa flash and alaankwa twinkle for all the creatures of the night to see.

WHAT IS THE WEATHER?

taaniši kiišikatwi

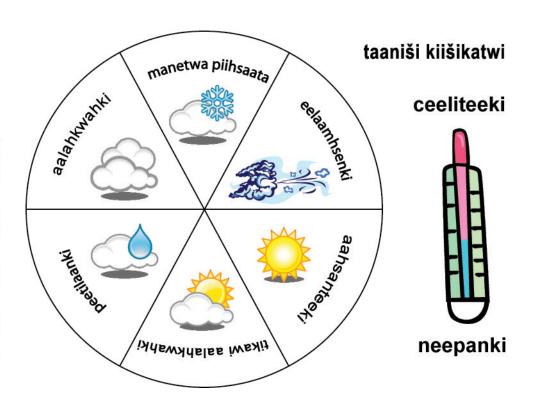
ACTIVITY 5

Materials Needed: None

Time: A few minutes each day

You may not realize it, but we all look at the sky every day! For most people, the first thing they want to know in the morning is "what is the weather?" In Myaamia, we ask "taaniši kiišikatwi."

Print out the weather chart below and put it somewhere you will see it every day. The refrigerator is usually a good place. The easiest way to tell the weather is to just step outside of your house in the morning. Is it ceeliteeki (hot) or neepanki (cold)? Is it peetilaanki (raining), aahsanteeki (sunny), or manetwa piihsaata (snowing)? It could be aalahkwahki (cloudy) or eelaamhsenki (windy) or tikawi aalhkwahki (partly cloudy). Remember, it doesn't have to be just one of these—some days might be neepanki, aahsanteeki neehi eelaamhsenki (cold, sunny and windy).



The chart doesn't describe all the weather you might have. It could be *eewanki* (foggy) one morning, but it should describe most of the days. Let's write down the weather for a week.

Day 1	
Day 2	
Day 3	
Day 4	
Day 6	
Day 7	

If you use our language to describe the weather every day for a month, you will get pretty good at using these words. How does the weather change during a month? How about during a year? Does anything else change when the weather changes? Most people will dress for the weather. You might carry an umbrella or wear a raincoat when it's raining. If it's neepanki, you would probably wear your heavy coat. Do any of the animals behave differently when the weather changes? How about the plants? Do you have a bird feeder in your yard? Watch carefully to see what the birds do during different kinds of weather? You might also take a walk (Activity 3) during different kinds of weather.

Does the weather depend on the time of day? We know that the warmest part of the day is usually midday. If you live in an area with fog, do you see it more often during certain parts of the day? Does the temperature depend on whether it is cloudy? During the summer, is it warmer or cooler when it is cloudy? Is the same true in the winter? Watch carefully—you might be the first *Myaamia* weather forecaster!

HOW FAR HAS THE SUN COME?

taaninhswi eehpyaaci kiilhswa

ACTIVITY 6

Materials Needed: None

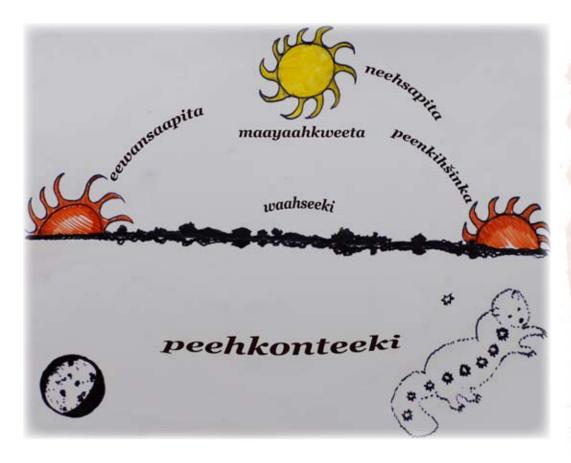
Time: A few minutes three times during a single day

Hint: This activity can be done alone or with Activity 2 and Activity 3

What time is it? We all ask this question many times each day. In *Myaamia*, we say "keetwi ilaacimwita kiilhswa" (what does the clock say?). But there is another way to ask "what time is it?" You can also ask "taaninhswi eehpyaaci kiilhswa." We use the word "kiilhswa" to mean clock, but we also use "kiilhswa" for the Sun. Why? Because both a clock and the Sun keep time. Let's find out how by tracking the Sun over the course of the day.

Waahseeki (daytime) is when it is light and the different times of day track the position of the Sun across the sky. *Eewansaapita* (sunrise) is when the Sun is emerging over the horizon. As the Sun gets higher in the sky, it reaches maayaahkweeta (midday). Neehsapita means that the Sun has passed the mid-day cycle and is moving down towards the horizon. Peenkihšinka (sunset) occurs as the Sun falls closer to the horizon. Do you think each of these occur at specific times on the clock? Is maayaahkweeta exactly at noon every day? You can find out by watching the Sun during a whole day with your family. When does each person in the family think the Sun is high enough overhead to be maayaahkweeta. Do you all agree on exactly when it starts or finishes?

Do you think waahseeki starts exactly at eewansaapita and stops exactly at peenkihšinka? Have you ever played outside on a late summer evening? Does it get completely dark right when the Sun sets? The time just after the Sun sets, when there is still a little light, is called *neehkanki*. The same thing happens in the morning. The sky begins to get lighter long before the Sun rises. This time is called naawaahseeki.



If the Sun and a clock are both called *kiilhswa*, when would you want to use clock time and when would you want to use the Sun? Do you think you would want to catch the school bus in the morning by watching the Sun? Would you set the alarm on your clock if you wanted to go swimming outside on a cold day?

Kiilhswa (the clock) has an important place in our lives since many of our life activities require the use of a clock. After a few days of observing the movement of kiilhswa (the Sun), you may notice animals that change their behavior as the Sun moves. If you are outside in the summer, look up. At *naawaahseeki*, the birds awaken and start to sing. You'll probably notice them flying around. If you have a bird feeder, the early morning is a good time to watch. During neehkanki, before it grows completely dark, you can often see wihkweeliihsia (a bat) or perhaps apeehkwa (a nighthawk). If you pay close enough attention to the world around you, sometimes you can tell the time of day just by the sounds!

THE MOON GROWS

keešaakosita kiilhswa

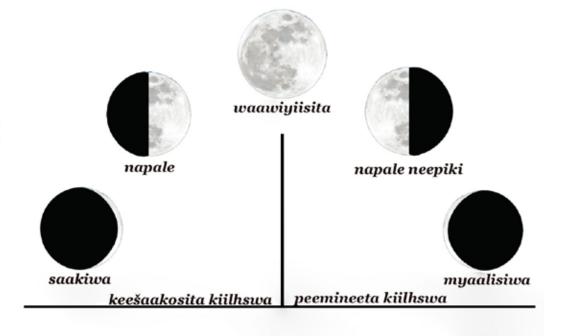
ACTIVITY 7

Materials Needed: None

Time: A few minutes a day for a month

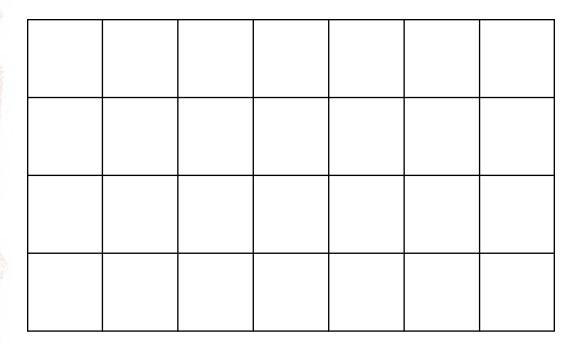
Kiilhswa (both the Sun and clock) help us track time during a single day. However, we are used to using weeks, months, and years to track longer periods of time. What else could we use to track longer periods of time? Is there anything else we see in the sky that changes regularly month after month, year after year?

For the Myaamiaki, the Moon also helps us track time. In Myaamia, we describe the Moon as keešaakosita kiilhswa (growing) and then peemineeta kiilhswa (dying). One complete lunar cycle is a little over 29 days. In the next activity, we'll see how twelve moons make up the Myaamia year, but first we have to get used to following the Moon.



Let's start by just finding the Moon. This could be easy—walk out in the early evening and look up. Do you see the Moon? Sometimes it isn't so easy. If it isn't cloudy, start by looking carefully all over the sky. Do you see the Moon? If you can't find the Moon, try again the next morning. Within a day or two, if it isn't cloudy, you should be able to find the Moon. Where do you see it? What time of day? What does it look like? Draw a picture of the Moon and sky in the box below. The picture can be as detailed as you want or just a simple shape of the Moon.

Now that we've found the Moon once, let's follow it for one lunar cycle. Whether you found the Moon in the morning or at night, try to go out at about the same time the next day. Is the Moon in the same place? Does it look the same? In the boxes below, draw the Moon each night for 28 nights. If it's cloudy, you can put a small cloud (



What happens during the lunar cycle? Did the Moon get bigger or smaller? Did the time you saw it change? Did it change position in the sky from night to night?

Exactly what you saw depends on when you started watching. Each month, the Moon starts out as a thin sliver and you first see it near the setting Sun in the west at dusk. For about eleven nights, the Moon grows from a thin sliver to a quarter moon and then to a full moon as it moves across the sky. By the time it is full, it is rising in the east while the Sun sets in the west. For the next fourteen days, you are more likely to see the Moon in the morning, and it gets smaller and smaller. Eventually, you won't see the Moon at all in the morning or evening sky. This phenomenon usually lasts about three days. Not to worry, it always sprouts again during the next moon.

MIAMI CALENDAR

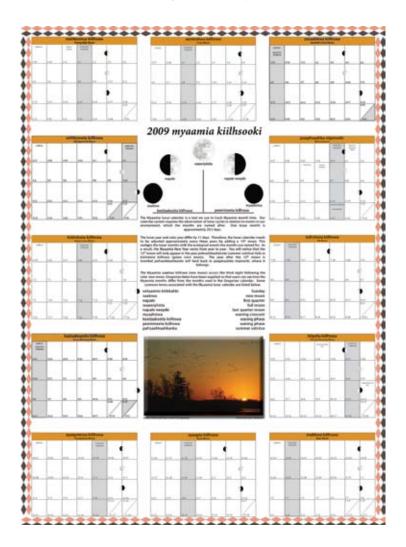
myaamia kiilhsooki

ACTIVITY 8

Materials Needed: Pencil

Time: One hour each month for a year

We've seen how the Sun helps us track time during a day (Activity 6) and how the Moon helps us track a "month" (Activity 7), but how do we keep track of a year? We are all used to following the yearly progress of months from January through December. We also know that certain things happen during each month. The hot days of summer come in July and the cold winter winds blow in February. What are some other ways of keeping track of a year?



For *Myaamiaki*, the Moon also helps us track time during a year. Your family should have received a copy of the Myaamia calendar from the Tribe. You can also download a copy from *myaamiaproject.org/publications.html#calendar*.

In most years, twelve moons make up the *Myaamia* year.

The names of the twelve moons are:

mahkoonsa kiilhswa (Young Bear Moon)

—2-3 year-old female bears give birth for the first time during this moon

aanteekwa kiilhswa (Crow Moon)

—crows nest during this moon

cecaahkwa kiilhswa (Sandhill Crane Moon)

—sandhill cranes nest in the Great Lakes region during this moon

wiihkoowia kiilhswa (Whippoorwill Moon)

—whippoorwills breed during this moon and their call tells us it is time to plant corn

paaphsaahka niipinwiki (Mid-Summer)

—during this moon, the longest day of the year, pahsaahkaahkanka (summer solstice) occurs

kiišiinkwia kiilhswa (Green Corn Moon)

—corn is in its milk stage and is good to eat during this moon

mihšiiwia kiilhswa (Elk Moon)

—this was the mating season for the now extinct eastern woodland elk

šaašaakayolia kiilhswa (Burning Moon)

—this is the first of two "burning moons." It is the time of year when low fires were common and helped to restore the prairies in the spring

kiiyolia kiilhswa (Burning Moon)

—this is the second of the two "burning moons." It is the time of year when fire was used in hunting to direct animals during the chase

ayaapeensa kiilhswa (Young Buck Moon)

—during this moon, young white-tailed deer drop their antlers

ayaapia kiilhswa (Buck Moon)

—during this moon, older, mature white-tailed bucks drop their antlers

mahkwa kiilhswa (Black Bear Moon)

—older, mature black bears give birth during this moon

What do these moon names have in common? Many of them are named for animals, including the black bear, white-tailed deer, the eastern elk, the crow, the sandhill crane, and the whippoorwill. That's right, but are they just named for the animals? Look again at the descriptions closely. What are the animals doing during these times?

What about the other moons? One is named for a plant (green corn), two are named in reference to fire, and one is named for the mid-summer. Do these names have anything in common? In šaašaakayolia kiilhswa, we see fire as something that restores and gives new life to the prairie. Fire helps clear the land of old grass and brush and opens seed pods that have fallen to the ground. Because of fire, new flowers and plants emerge in the spring. Do we see anything else emerging? What are all the birds doing during their moon? How about the bears? Did you know deer only grow antlers when it's time to mate? All of these moons are following the cycles of nature and the rebirth of our land. When we use our lunar calendar, we aren't just following the Moon in the night sky; we are following the cycles of nature in our homelands.

Let's see how the land changes throughout the year around your home. Start by						
just going for a walk. By now, you are used to walking in different directions.						
In Activity 3, you went for walks all around your house. Let's take another walk						
and, this time, let's look carefully at what changed. As you walk, write down						
anything you notice that you didn't see last time.						

Did you notice any birds that you didn't see last time? Were the animals very active? Or maybe they were just trying to stay warm in the cold days of winter? How about plants? Were there leaves on any of the trees that weren't there last time? Or maybe the trees are starting to lose their leaves as fall comes? Were there any new flowers? Our world changes all the time.

You can go for a walk during every moon. Try going on the exact same walk and see how the land changes. Keep track of the changes. We know that the Myaamia calendar has changed in the past and will probably change again in the future. Take mihšiiwia kiilhswa, for example. We can't track the elk in our homelands any more, but I bet you can help find something else that changes during that moon. Look carefully!

Extension:

Did you notice that earlier we said 'most' years have twelve moons. Why not every year? We are used to a calendar where every single year has exactly twelve months! So, why would a lunar calendar be different? Let's find out. The lunar cycle lasts 29½ days. That means that it takes 29½ days from the appearance of one moon to the appearance of the next moon. Don't let the half day worry you—you still see the Moon at night.

However, what would happen if we ALWAYS had twelve moons and each one was 29½ days. In 2009, paaphsaahka niipinwiki started on May 27 on the western calendar and the longest day of the year happened on June 21, towards the end of paaphsaahka niipinwiki. That's what should happen—the longest day of the year should occur during *paaphsaahka niipinwiki*. But suppose we ALWAYS had twelve moons. The year would be 354 days long. We know that it takes 365 days for the Earth to go around the Sun. (Actually, it takes 365.25 days, since every four years we have a leap year.) So, every year, paaphsaahka niipinwiki would start eleven days earlier. In 2010, *paaphsaahka niipinwiki* would start around May 16. By 2020, it would start on January 26. Oh my! The Mid-Summer Moon would be in the middle of winter!

What should we do? Can you think of any way we can adjust the calendar so that mid-summer doesn't come in the middle of winter? What if we added a moon? Sure, we could have thirteen moons? Wait, would that work? What if we added a thirteenth moon EVERY year? In 2010, paaphsaahka niipinwiki would start around June 7. By 2020, *paaphsaahka niipinwiki* would start September 25! So adding a moon EVERY year wouldn't work either. What if we just added a thirteenth moon in some years, but not in every year? Do you think that would work?

In the *Myaamia* calendar, we add a thirteenth moon in some years, but not every year. We call that moon *waawiita kiilhswa* (Lost Moon). How do we know when to add waawiita kiilhswa. Remember that the longest day of the year should occur during paaphsaahka niipinwiki. So, all we have to do is keep track of when the longest day of the year occurs. If it occurs during paaphsaahka niipinwiki, we don't need to add waawiita kiilhswa. But, if the longest day of the year falls within the last ten days of *paaphsaahka niipinwiki*, we need to add *waawiita kiilhswa* to make sure that the cycles of nature match the names of the moons!

MIAMI SKY

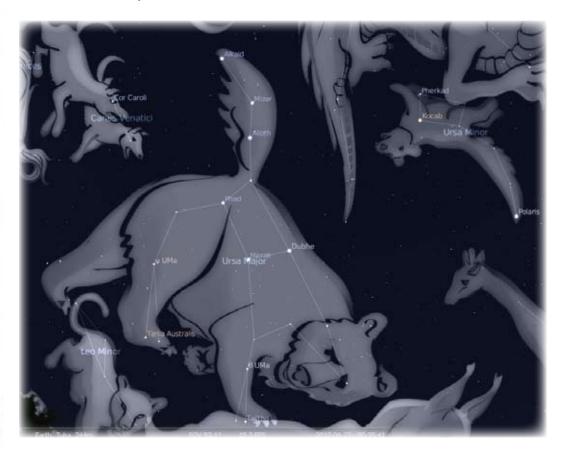
myaamia kiišikwi

ACTIVITY 9

Materials Needed: A computer with internet connection and mouse (preferably one with left and right buttons and a center scroll wheel)

Time: 30-60 minutes to install the computer program, approximately

30-60 minutes to explore



In the activities up to this point, we've focused on the weather, Sun, and Moon when looking at the sky. What about the rest of the night sky? What does it look like for *Myaamiaki*? Let's find out.

If you walk outside on a clear night and look towards the north, almost anyone can spot the Big Dipper. Three stars make up the handle of the Big Dipper and four more form the bowl. The two end stars point towards the North Star, called Polaris. The entire night sky revolves around Polaris and it appears to stand still.

But the Big Dipper is just part of a bigger group of stars, called a constellation, which astronomers label as Ursa Major, or the Great Bear.

You probably know the names of other constellations, especially the signs of the Zodiac like Scorpio the scorpion or Leo the lion or Cygnus the swan. But all of these names came from ancient Greek sky watchers. As Myaamiaki, we see the sky differently, with our own set of constellations. Do you think the *Myaamia* people have a constellation named for a giraffe? Probably not, since giraffes didn't exist in our homelands. So, what would our people name constellations after? You've explored up, down, and all around throughout these activities. What plants and animals live around you? Do you see any of their shapes when you look up in the night sky? You may not see anything right away. If the weather is nice, try lying on your back outside and observe the sky until you start to see some shapes.

One animal that Myaamia people see in the night sky is aciika. Aciika (fisher) is a rodent—a little like a weasel—that lives in the northern woods. The seven stars that run along the back of the Great Bear make up aciika for the Myaamiaki.

Aciika revolves around aciika alaankwa, which is also known as the North Star. Stories of aciika from neighboring tribes tell of great heroism. Like the lunar calendar we learned about in the last activity, aciika is a marker of cycles in Myaamionki. Each spring at dusk, aciika moves from the northern horizon up high into the sky, and this rising in the sky tells of the coming of spring.

In this activity, we have a way for you to envision the night sky as Myaamia



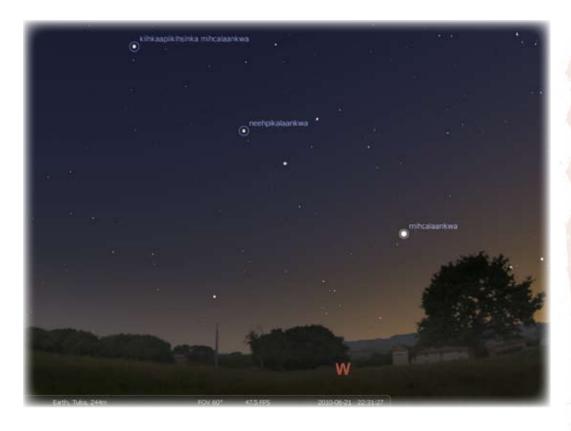
people see it—no matter where you live or what day or time it is. To do this, you'll have to go to the website myaamiaproject.org/earthandsky to the downloads tab, where you'll find the link to the Stellarium website to download the free Stellarium program and another link that contains instructions (for both Mac

and PC) and files for modifying Stellarium to view the *Myaamia* day and night sky. The instructions aren't complicated, but it will take 30-60 minutes to finish installing the program. Once you do, you'll be amazed!

In the image below, you will find the kind of view you'll see from the *Myaamia* version of Stellarium. According to the image, you are looking straight up at 10:30 pm on June 21, 2010. You can see *aciika* and *aciika alaankwa* off to the north. Just starting to rise in the east is *ciipayihkanawe*. Western astronomers call this the Milky Way, but *Myaamia* people call it the spirit trail. The spirit trail is where our ancestors go after they leave *Myaamionki*. You can see their footprints and camp fires running across the night sky.

Running from south to west in the night sky, you'll see four objects in a row. They are *tipehki kiilhswa*, *kiihkaapiikihšinka mihcalaankwa*, *neehpikalaankwa*, and *mihcalaankwa*. What are these objects? Let's start with the first one. *Tipehki kiilhswa* is the brightest object in the night sky and we've already talked a lot about it. What is it? You only see it in the night sky some of the time. It's the Moon.





Mihcalaankwa is usually the next brightest object. In western astronomy, it is often called the morning or evening star because it is only seen after dusk or before dawn, never in the middle of the night. I'll give you a hint—it's a planet. Do you know what the brightest planet is? It's Venus.

Neehpikalaankwa will be the dimmest of the four. It's another planet. Do you know which one? Let's see if we can figure it out. It starts with neehpik-. We see that same part of the word in *neehpikicia* (cranberry). What color are cranberries? That's right—red. So, what's the red planet? It's Mars.

Kiihkaapiikihšinka mihcalaankwa is the one with the longest name. The first word means that it has a stripe sitting upon it, and the last word means it's a bright star (a planet). Which planet has a stripe? Actually it's more like a ring, but you have to be really, really close—like a spaceship—to see that. It's Saturn.

Now, most of us don't look straight up at the night sky. We are used to looking above the fields or trees. That's okay. Stellarium allows us to change our view. Here's what the three planets will look like if you look southwest in the night sky. Finally, we've talked about how important keeping track of the Moon is to the Myaamia people. Stellarium allows us to zoom in and see exactly what the Moon should look like on any night at anytime. In the image below, this is what the Moon looked like on June 21, 2010. Once you get the program running, you can re-do Activity 7 in virtual space by changing the date and time to see how the Moon changes through one lunar cycle. Try it!

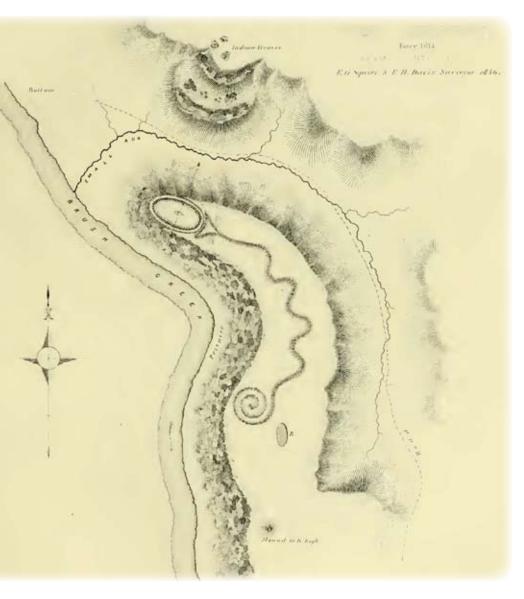
You can spend as little as a few minutes with the program or hours. Trust me, it can do a lot of different things and I've only described a few of them. The best thing about Stellarium is that it allows you to figure out what myaamia kiišikwi looks like anytime you want to go out and stare at the sky. If you live in a big city, Stellarium allows you to virtually darken the sky so that you can observe the night sky of our people.

Stellarium allows us virtual control over many variables, which provides us an amazing opportunity to learn. However, once you've learned how to find these celestial bodies in the night sky and how to follow their movement in the virtual



landscape of Stellarium, it is essential that you go back outside at night and see things "for real." Imagine—these are basically the same celestial bodies that your ancestors looked up at. More than likely, they looked up at the beauty of the night sky with the same awe and wonder.

Serpent Mound







Long before our ancestors were called *Myaamia*, earlier people settled the Wabash River Valley and inhabited the lands we now call *Myaamionki*. These earlier groups left their own marks upon the land and the most impressive of these are the mounds built between 1,000 and 2,000 years ago. These mounds are found throughout *Myaamionki*, particularly in parts of modern-day Ohio. Perhaps the most spectacular of all the Ohio mounds is Serpent Mound. Over a quarter mile long and up to three feet high, this 1,000 year old effigy mound above Brush Creek in Adams County, Ohio is in the shape of a coiled serpent.

Serpents were a common symbol throughout these ancient cultures and are also important in *Myaamia* culture. Our stories tell of *Lenipinšia*, a two-horned serpent that comes from the sky and lives in the rivers and lakes of *Myaamionki*. You can read our traditional *Lenipinšiaakami* story on page 58 of the book *Myaamia neehi Peewaalia Aacimoona neehi Aalhsoohkaana* (Myaamia and Peoria Narratives and Winter Stories). *Myaamia* storytellers would say that when a meteor passed overhead, *Lenipinšia* was moving.

Lenipinšia continues to move today. We've all seen shooting stars moving across the sky. While most of these shooting stars are small pieces of dust, an occasional larger piece of space rock has left its mark in *Myaamionki*. The Serpent Mound effigy mound is built inside of an ancient (320 million years old), huge (five miles across) impact crater. Although changed by water, ice, and wind, cone shapes found in rocks in the area testify to the ancient collision. More recently, an impact 13,000 years ago may have caused fires across much of North America, with dust from the fires and collision causing the climate to cool. It is possible that both the mound builders who constructed Serpent Mound and the *Myaamia* storytellers who first told our *Lenipinšia* stories were ultimately inspired by this collision 13,000 years ago.

For more information on the Serpent Mound Historic Site, visit highlandssanctuary.org/Serpent_Mound_ Visitors_Guide.htm.

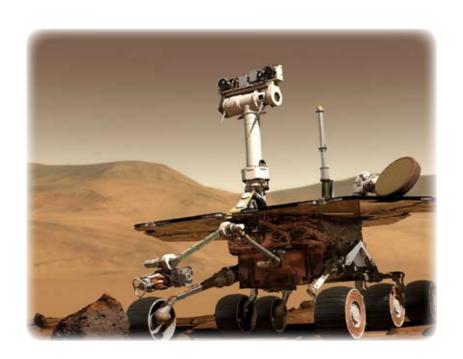
far left: Line drawing of Serpent Mound effigy mound (from Ancient Monuments of the Mississippi Valley).

left top: View of Serpent Mound.

left bottom: Cone-shapes within rocks near Serpent Mound formed during a meteorite impact long ago. (Photo courtesy of Smithsonian Institution)

For more information, photos, and directions from any location, visit the interactive Google Map under the downloads tab at: myaamiaproject.org/earthandsky.

mars rock neehpikalaankwa ahseni





Myaamionki includes the Wabash River Valley in Indiana, lands in eastern Kansas, and our sovereign headquarters in northeastern Oklahoma. In these places, our culture is anchored. From these places, *Myaamia* people have spread across the United States and around the world. In early December 2005, the contributions of the *Myaamia* people were recognized on another world—Mars!

In January 2004, NASA landed two rovers on the surface of Mars. Remote explorers, these robotic spacecrafts were sent to search for signs of water on the Red Planet. One of these rovers—named Spirit—landed in a large impact crater named Gusev crater. Citizens of the Miami Tribe of Oklahoma were among the thousands of engineers and scientists who built and operated the spacecraft.

After exploring for more than a year and a half in a series of low hills named the Columbia Hills, the team operating the Spirit rover started driving the rover towards a low pile of rocks in late November 2005, arriving in early December. To recognize the contributions of the *Myaamia* people to the exploration of space, these rocks were named "Miami."

Tribal students at Miami University in Ohio subsequently took up the challenge of developing a name for the Mars rover, picking *neehpikalaankwa keeyosia* (red star wanderer). While our experience as *Myaamia* people is rooted in our collective history in *Myaamionki*, we live in the contemporary world and our citizens are engaged in every career, many of which our ancestors could have never imagined. Where will the next generation of *Myaamiaki* take us? We can't wait to find out!

left top: Artist's concept of the rover on Mars.

left: Pile of rocks in the Columbia Hills, Gusev Crater, Mars, named "Miami".



aacimotaatiiyankwi SHARING STORIES

This concluding section provides a way for you and your family to review and share what you have learned. Through sharing stories of your experiences, you can help encourage and improve the learning experiences of the rest of your bigger *Myaamia* family.



DRAW ALL SORTS OF THINGS FROM THE FARTH AND SKY

awikiilo ceekiši ašiihkionkonci neehi kiišikonkonci

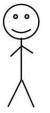
Activity 10

Materials Needed: Paper (white posterboard), markers, crayons or colored pencils

Time: One hour

We've explored our place up, down, and all around. We've marked the directions, collected rocks, gone on walks, watched the weather, followed the Sun to tell the time of day and the Moon to follow the time of the month, watched as our lands change from moon to moon, and viewed the heavens as *Myaamia* people. In this activity, we have a chance to draw a map of our place. Get a piece of paper or posterboard and let's get started.

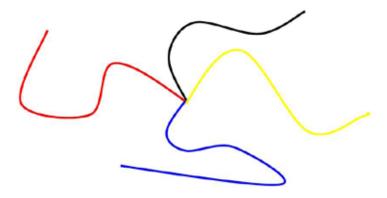
The first thing I want you to do is to draw yourself. Don't worry if you can't draw. We aren't all artists, but we can all draw our world. You might use a stick figure of yourself.



niila

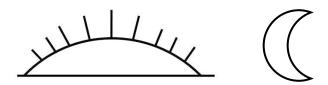
In Myaamia, "niila" means "me." Go ahead and write down "niila." Where did you draw yourself? Are you at the bottom of the page? In the middle of the page? At the top of the page? Did you leave room for things below you? Did you leave room for things above you?

You walked four directions from your house. Do you remember the colors that marked the directions? You might use colored lines like the ones below for the walks you took in each direction.



What does a *Myaamia* map look like? How does it differ from a road map? In a way, a *Myaamia* map is like thinking about your family. You are related to your brothers and sisters, even if you can't remember their birthdays. What did you see that was important to you when you went on your walks? Those are the kinds of things you might want to put on your map, even if you can't remember exactly where they were. Maybe you saw ahtawaani (a tree), anikwa (a squirrel), or meehcaakamihsi (a stream). Maybe you saw the wiikiaami (house) of a friend or šoohkwaakana (a car) that you really liked. Draw whatever you saw that was important to you!

Don't forget the things you saw above you. Where did you see the Sun? Do you remember where it came up in the morning or set in the evening? You might want to put that on your map! What about the Moon? What phase was the Moon when you first saw it? How did it change? Did the time of day the Moon appeared change?



What about below you? What makes up the things under your feet? Don't forget to draw that as well.

Finally, did you explore your world with anyone else? Maybe *kikya* (your mom) or *koohsa* (your dad) or perhaps you went on a walk with your *alemwa* (dog).

Use as many colors as you like and try to label what you can in *Myaamia*. You'll find some of the words throughout this activity book and you can find many more in your family's copy of the *Myaamia* dictionary. If you can't find your family's copy of the dictionary, you could use the online dictionary (myaamiadictionary.org). Once you finish your drawing, you can hang it on your refrigerator or your bedroom door to remind you of everything you saw. If you have a digital camera or a scanner on your computer, take a picture and send it to the Myaamia Project at Miami University in Ohio (myaamiaproject@muohio. edu). They can help you with *Myaamia* words to describe your world and give you some hints to make your drawing even better! Every year, they may select a few of the posters drawn by Tribe members to include in an article in the newspaper highlighting the educational efforts of the Tribe that year.

WRITE!

awikiilo

ACTIVITY 11

Materials Needed: Paper and pencil

Time: A few minutes to an hour

Myaamia people have told stories for countless generations. Stories can talk about our experiences as a people, tell about what someone has done, and help shape our understanding of the world around us. Sometimes stories occur in a specific place at a specific time and sometimes they just happen "one day in a place far away." Sometimes these stories are about people who lived long ago, but new stories—about people still alive today—are always being told and recorded. In some Myaamia stories, animals are the main characters and there are no humans involved at all. Together, all of our diverse stories carry the feelings, thoughts, and emotions of generations of *Myaamia* people. Stories help connect us as a people.

Take some time and try writing a story about what you've seen or thought or felt. It can be a few words long or a few pages long. Maybe kikya or koohsa can help you write it down. Below, we offer some ideas about what you might write about. Awikiilo! (Write!)

For the youngest learners:

- Maybe you saw something near your house that you had never noticed before. What was it? Was there something about it that you noticed this time, even though you might have walked by it many times?
- Do you remember the story at the beginning about *ahkwaniswa* (young girl) and anikwa (squirrel)? If not, look again. The story ends when ahkwaniswsa goes back to her tent, deciding that tomorrow she would look around more. What do you think happened the next day? Who did ahkwaniswa see when she paid attention?

For school-aged learners:

- If you lived in an underground house, you would see the world like a rock. Not from above, like the eagle, or even around us, like we do every day, but from below. What do you think the world would look like from underground?
- Each night, the Moon moves across the sky over *Myaamionki*. Imagine you are the first *Myaamia* astronaut standing on the Moon. What do you think you would see looking down on our homelands?
- Do you remember the story about rock and mole? If not, look again. The story ends when a little girl picks up rock. What do you think happens next? Can you write more of the story?

For teens and adults:

- Rocks tell stories. They tell us about where they have been and how they got here. Maybe the rocks around you formed in an ocean. Maybe they were carried by a glacier. Maybe you live where there are basalts (lava rocks) that are unlike anything found in Indiana, Kansas, or Oklahoma. What story do the rocks around you tell?
- Can you think of other places where rocks and the *Myaamia* culture have existed in the same place? Where is that place? You can write your own description of that place.
- Did you visit any of the places described in this book? If so, write the story of what you saw and did. You can include pictures.

Sharing your stories:

- Stories are even more fun when you share them with others! When you're comfortable with what you have, you can read the story out loud for your parents and siblings or you can perform your story like a play.
- You can also share your stories with *Myaamia* educators by sending them to the staff of the Myaamia Project (myaamiaproject@muohio.edu).
- Once a year tribal education leaders will select a few of the best stories, photographs, and images to share with the entire Tribe in an article published in *Myaamiaki Aatotankiki*—the Miami Tribe of Oklahoma's official newspaper.

aahsanteeki it is sunny

aalaapilo you (singular) look in a particular direction!

aalahkwahki it is cloudy

aanteekwa kiilhswa Crow Moon; the time of year when crows nest

aašipehkwa waawaalici Seven Pillars

aciika a fisher; a mammal related to a martin. This constellation

includes the grouping of stars known as Ursa Major

aciika alaankwa the North Star (lit. fisher star); the constellation aciika rotates

around aciika alaankwa

aciwi hill

ahkwaniswa a young girl

ahsena large stone, rock formation

ahseni stone, rock

ahsenintehsi a small rock or pebble

ahsenipi lead
ahtawaani a tree
alaankwa a star

alaankwa peemihsaata shooting star, meteor

alaankwaki stars

alaankwaki peepamihsaaciki meteor shower

alemwa dog

anikwa squirrel

apeehkwa a nighthawk ašiihkiwi earth, land

ašiihkiwi moohkiiki land emerging from the water

awansaapiiciši towards the direction of the rising Sun; east

awikiilo write!

awikiilo ceekiši ašiihkionkonci

neehi kiišikonkonci

draw all sorts of things from the earth and sky!

ayaapeensa kiilhswa Young Buck Moon; the time of year when young white-tailed

deer drop their antlers

ayaapia kiilhswa Buck Moon; the time of year when older, mature white-tailed

bucks drop their antlers

cecaahkwa kiilhswa Sandhill Crane Moon; the time of year when sandhill cranes

nest in the Great Lakes region

ceeliteeki it is hot weather

ciipayihkanawe the Milky Way (lit. spirit trail)

eehsahsena any rock with a shell in it

eelaamhsenki it is windy

eewanki it is foggy

eewansaapita sunrise

iihkipakaamhkiiki blue clay

iinka mom

iiši-aancihsaata kiilhswa how the Sun moves

kaayohsena sandstone (lit. rough stone)

keešaakosita kiilhswa the Moon grows

keetwi ilaacimwita kiilhswa what does the clock say?

kiihkaapiikihšinka mihcalaankwa the planet Saturn (lit. big star with bands across it)

kiilhsooki months

kiilhswa Sun, Moon, clock, month

kiišikwi

kiiyolia kiilhswa *Burning Moon*; this is the second of two *burning moons*;

the time of year when fire was used in hunting to direct

animals during the chase

kikya your mom

kiišiinkwia kiilhswa Green Corn Moon; the time of year when the corn is in its milk

stage and is good to eat

kociihsasiipi St. Joseph River, (lit. bean river)

koohsa your dad

lenipinšia the two-horned serpent that comes from the sky and lives in

> lakes of Myaamionki; it is said that when a meteor is seen in the night sky, the serpent is moving and is accompanied by fires

maacaataawi let's head off

maayaahkweeciši to the south maayaahkweeta noon or midday (lit. directly overhead)

mahkateewi coal

mahkoonsa kiilhswa Young Bear Moon; the time of year when 2-3 year-old

female bears give birth for the first time

mahkwa kiilhswa Black Bear Moon; the time of year when older, mature black

bears give birth

manetwa piihsaata snow is falling

meehcaakamihsi stream

meenankweepiaki the Pleiades

mihcalaankwa the planet Venus; also known as the morning or evening star

mihšiiwia kiilhswa Elk Moon; this was the mating season for the now extinct

eastern woodland elk

mihtahkatwi grass or hay mihtahkiši downwards miincipahki a field of corn miisaahaki everywhere

myaalisiwa waning crescent

myaamia the Miami Tribe or the myaamia community (in the context of

English sentences)

myaamia kiilhsooki Miami calendar

myaamia mihši-nipwaantiikaani Miami University

myaamiaki the Miami people, "downstream people"

myaamionki the place of the Miami people

myaamionkonci from the place of the Miami people

naahkiipioni chair

naawaahseeki the time before the Sun rises, when the birds begin to sing

nameewa siipiiwi St. Mary's River (lit. sturgeon river) napale kiilhswa first quarter moon (lit. half moon)

neehi and, or

napale neepiki

neehkanki the time just after the Sun sets, when there is still a little light

last quarter moon (lit. half dead)

neehpikalaankwa the planet Mars (lit. red star) neehpikalaankwa ahseni Mars Rock (lit. red star rock)

neehpikalaankwa keeyosia Mars rover (lit. red star wanderer)

neehpikicia cranberry

neehsapita when the Sun passes midday and is moving toward the horizon

it is cold weather neepanki

niila me

nipihsi pond, lake

noošonke siipiiwi Neosho River, Oklahoma

paaphsaahka niipinwiki Mid-Summer; during this moon, the longest day of the year

(summer solstice) occurs

pahsaahkaahkanka summer solstice

it is dark peehkonteeki

peemineeta kiilhswa waning phases of the Moon (lit. the Moon goes along dying)

peenkihšinka sunset

peenkihšinkiši toward the direction of the setting Sun; west

peepankihšileeta ahsena shale

peepicinehkia mole (lit. flat hands)

peetilaanki it rains peminkiši upwards

pihcita any little bird the size of a sparrow, cardinal size or less

pimi oil

pimpaalitaawi let's go for a walk!

pipoonahkionkiši towards the place of winter; north

pipoonwi winter, year

Little Wabash River (lit. calm water) pwaawikamisiipi

the confluence of the Maumee saakiiweeki taawaawa siipiiwi

saakiwa kiilhswa new moon (lit. moon sprouts)

šaašaakayolia kiilhswa Burning Moon; this is the first of two burning moons; the time

of year when low fires were common and helped to restore the

prairies in the spring

šoohkwaakana car tapaahsia Canada goose

taaninhswi eehpyaaci kiilhswa how far has the Sun come?

taaniši kiišikatwi what is the weather?

Maumee River, "Ottawa River" taawaawa siipiiwi

tikawi aalhkwahki it is partly cloudy

tipehki kiilhswa the Moon

waahseeki it is daylight

waapaahšiki siipiiwi Wabash River (lit. bright shiny river)

waapahsena limestone or dolomite (lit. white stone)

waapankiaakamionki Marais des Cygnes river, Kansas (lit. swan water)

waapanswa rabbit

waawaahsamwa firefly

waawiita kiilhswa Lost Moon; the thirteenth moon of the Myaamia lunar

> calendar; it is added to the calendar when the longest day of the year falls within the last ten days of paaphsaahka niipinwiki

(or *Mid-Summer Moon*)

waawiyiisita full moon

wihkweeliihsia bat (animal)

wiihkoowia kiilhswa Whippoorwill Moon; whippoorwills breed during this moon

and their call tells us it is time to plant corn

wiikiaami house, lodge, building of any kind

wiilinwahseni quartzite or granite (lit. fat rock)

wiipica an arrowhead

wiipicahkionki Forks of the Wabash (lit. the flint place)

wiipicaki arrowheads

wiipici chert or flint

The place of the Miami (*myaamionki*) is more than just the land on which we live, it is up, down, and all around. Based on four years of workshops, camps, field trips, and lectures supported by the Miami Tribe of Oklahoma and NASA, this curriculum explores the earth and sky from a *Myaamia* perspective.

Designed to engage the entire family, the curriculum contains:

- Illustrated stories that can be read to our youngest learners.
- Activities for school-aged children that explore the earth and sky.

 Go for walks, follow the motions of the Sun and Moon, collect rocks, and learn how the land around you changes through the year.
- Teens and adults can explore important places that have both a *Myaamia* and geologic connection. Learn how Seven Pillars, tar springs in Kansas, and rock outcrops in Oklahoma all record this history of our place and people.

The entire curriculum is supported by an interactive website that contains sound clips of *Myaamia* words and phrases and links to an interactive map so you can visit sites in *Myaamionki*.

Visit the website at: myaamiaproject.org/earthandsky

ašiihkiwi neehi kiišikwi myaamionki

