

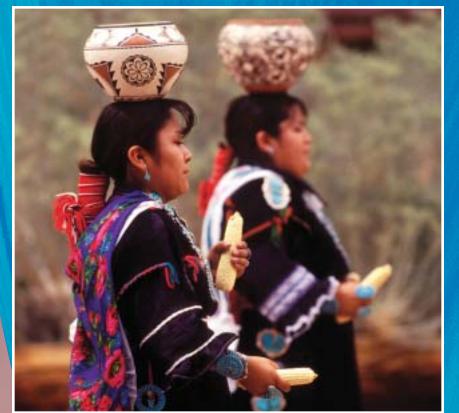
NATIVE PEOPLE AND THE LAND

THE A:SHIWI (ZUNI) PEOPLE: A STUDY IN ENVIRONMENT, ADAPTATION, AND AGRICULTURAL PRACTICES





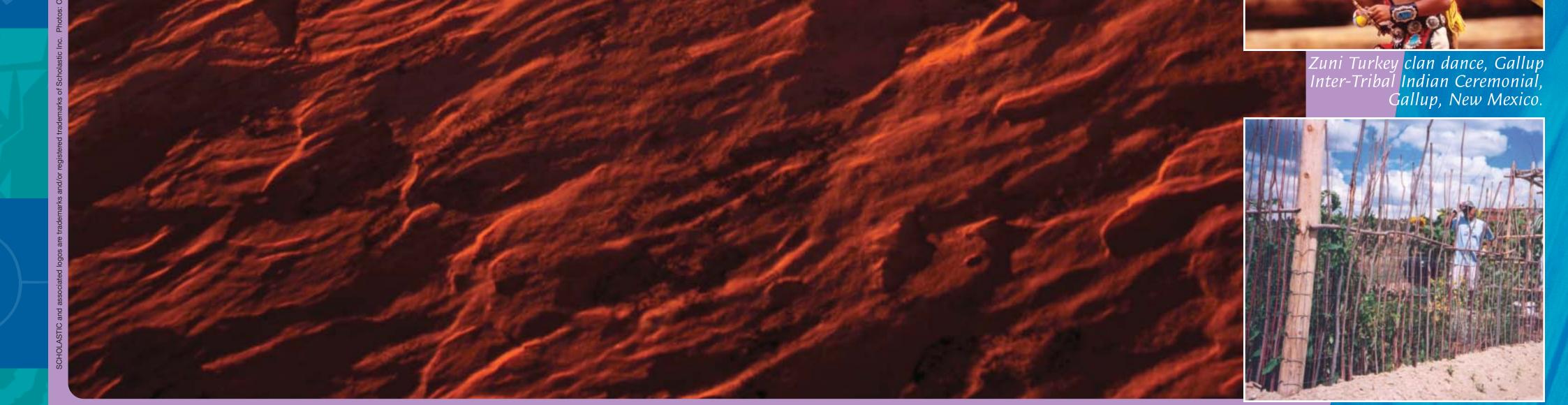
1873 photo showing a view of Zuni Pueblo fields and walled gardens in Zuni, New Mexico.



Zuni Indian Pottery Dance, Gallup Inter-Tribal Indian Ceremonial, Gallup, New Mexico.



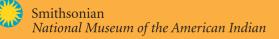




Dowa Yalanne (Corn Mountain) is a mesa that is sacred to the A:shiwi (Zuni) people. Located about three miles east of Zuni, New Mexico, it is visible to the A:shiwi people for miles and has been used for centuries to mark the path of the sun.



Modern-day waffle garden at Zuni Pueblo in New Mexico. The National Museum of the American Indian in Washington, D.C., also includes a waffle garden in the croplands area of the museum.



The A:shiwi (Zuni) People

A STUDY IN ENVIRONMENT, ADAPTATION, AND AGRICULTURAL PRACTICES

Grade levels: 6–8 Time required: Three class periods

OVERVIEW

By focusing on the A:shiwi (*Ahh-SHE-we*) people of the American Southwest, students will learn about the connection Native people have to their natural world. Students will make observations about how the A:shiwi (also known as Zuni) people adapt to their environment and the cyclical aspect of their cultural and agricultural practices. Students will expand their knowledge through independent research on another Native community and their interactions with the natural world.

CURRICULUM STANDARDS FOR SOCIAL STUDIES

Culture (I); Time, Continuity, and Change (II); People, Places, and Environment (III)

Source: National Council for the Social Studies. Material also meets National Geographic Standards, Geography Education Standards Project.

OBJECTIVES

- Understand how the A:shiwi people adapt to their environment
- Understand how the A:shiwi people and other Native people used observation and experimentation over centuries to develop science-based agricultural practices
- Understand the reciprocal relationship between the A:shiwi people (and other Native people) and the natural world and how this involves understanding the ecosystem and sustainable environment
- Understand how A:shiwi waffle gardening reflects the traditional values of their culture

BACKGROUND

Native people understand the relationship between nature and themselves in a distinct way. Among the world's first environmentalists, American Indians have maintained the same special connection to the natural world for thousands of years: viewing themselves as equal with all life. For example, a story of the Diné (Navajo) people of Arizona, Utah, and New Mexico tells of how the First Man and the First Woman were produced from two ears of corn. At the core of this connection is the knowledge that all life deserves great respect, and that by respecting and conserving the earth's resources, all things will continue for generations to come.

Native people understand that life occurs in cycles and that the seasons of the earth govern all living things. Humans, animals, plants, trees, rocks, spirits, and weather patterns are all related and considered part of one society. A balanced environment is maintained when one knows one's place within nature and takes only what one needs. This is accomplished by meeting every task—large or small—with honor and appreciation. Throughout the year, many Native people gather for ceremonies to mark each season (or cycle) and to give thanks for what the earth has provided.

Both the environment and climate greatly influence the lives of Native people. By closely observing nature, they have adapted their hunting, gathering, and farming skills to the lands they occupy. Long before contact with Europeans, American Indians practiced specialized agricultural techniques such as natural selection, selective breeding, and crop rotation.

The Hidatsa people, from the plains bordering the Mississippi River, developed farming technologies to deal with excessive moisture in their soil. The A:shiwi people of New Mexico have thrived in a semi-arid environment for thousands of years by finding ways to grow crops with very little water. Indeed, the A:shiwi people have observed their environment for many generations and developed strategies to grow food successfully. They developed a dry-farming method called Latdekwi:we, or waffle gardening, which takes maximum advantage of what little precipitation the land receives.

Today, the A:shiwi people continue to live on their ancestral lands along the Zuni River in Western New Mexico near the Arizona border, within the presence of their sacred mesa, Dowa Yalanne (Corn Mountain). The A:shiwi people use Dowa Yalanne, located about three miles east of Zuni, to mark the path of the sun and determine the time for the solstice and harvest ceremonies that are part of their traditional culture.

PREPARATION

Make photocopies of all pages of the poster before displaying poster. Read the Background section on page 1 and prepare to summarize for students. Display the poster in the classroom where students can view it easily.

PROCEDURE

1. Explain to students that they are going to examine how Native peoples adapt to their environment. They will focus on the A:shiwi (Zuni) people, whose tribal lands are located in the American Southwest. Next, give students ample time to look at the poster and the central image of Corn Mountain, as well as its caption. Have them look for clues in the photo about the environment and how people living there might adapt to it. Model this by describing what you see in the photo and posing a question. Point out any clues in the text or captions. Have students record their first impressions and then discuss as a group. Encourage questions about the poster, such as "Where is this located?" and "What does the picture tell us about the climate? The environment?" Discuss possible answers to the questions.

Next, have students examine the smaller photos on the poster. What do they notice about the design of the waffle gardens? Discuss possible reasons for the design. Use the images of chilies and squash to begin a discussion about how Native people work with their environment and use its gifts to help their culture thrive.

2. Distribute a photocopy of **Reproducible 1.** Have students read about Native people and their relationship to nature. Provide additional information from the Background section on page 1. Explain to students that they will work in small groups and use text, charts, and photographs to learn more.

3. Explain to students that they will learn about the A:shiwi people and their reciprocal relationship to their environment. Students will look for themes such as how traditional values and agricultural values are linked; some of the contributions that Native people have made in terms of food, products, and crops; and Native people's adaptation to their environment. While working in groups to examine and discuss the materials, each student will be responsible for answering any related questions.

- 4. Make one copy of each reproducible for each student:
- Reproducible 2—Connection to the Land
- **Reproducible 3**—Exploratory Questions
- **Reproducible 4**—A:shiwi Geography and Environment
- **Reproducible 5**—In Balance with Nature
- **Reproducible 6**—A:shiwi Cycle of Life
- Reproducible 7—Independent Research Project

5. Once students have worked their way through Reproducibles 1–6, begin **Reproducible 7.** Explain that they will need to complete this research template independently as they explore another Native tribe or group for a presentation or research paper.

REFLECTION AND DISCUSSION

1. Choose representatives from each group to discuss what they have learned about Native Americans and the A:shiwi people's relationship with nature. Record students' questions about what they learned and summarize responses to reproducible questions.

2. At the end of the discussion, have students reflect on their own relationship with their environment. What part, if any, does nature play in their daily lives? How might they include nature more?

Answer Key

Reproducible 3: Answers may include: 1. Preservation of culture; the tribes have better watering systems. 2. Gardens can be planted in more varied locations than just along the Zuni River; different types of foods can be grown. 3. The summer solstice and the winter solstice-the cycles of the sun that reflect the changing seasons of the year; answers will vary. 4. Seeds represent the food that will be grown for future generations. 5. Climate is used to their advantage; they see all aspects of society as interconnected and work with this society, not against it; they use foods and products to maximum efficiency. 6. Squash, beans, nuts, wild fruit. Reproducible 4: 1. The western area, along the Zuni River, on the Arizona border. 2. Rio Grande River, Pecos River, San Juan River, Navajo Reservoir. 3. The semi-arid climate features sporadic rainfall. 4. A higher elevation reduces temperature (and, depending on the geography, may increase precipitation). 5. About 12.4 inches. 6. This region must be very hot and dry. 7. Almost a third (about 32%). 8. Answers will vary. Reproducible 5: Answers may include: 1. In the past, waffle gardens were located along the Zuni River for easy water access; fences were built of sticks and branches. Modern-day gardens can be built away from the river near modern water sources; modern fencing materials such as chicken wire can be used. 2. Modern-day watering systems such as wells and community water systems would make it easier for people to maintain gardens in locations away from the river; with easier access to water, different types of crops could be grown; watering gardens would be easier. **Reproducible** 6: Answers may include: Summer: Ceremonies are held to ask for rain and the growth of crops; Rains nurture plants so they grow; Fall: Plants are harvested and the A:shiwi people give thanks to the plants for giving up their lives so the A:shiwi people may live; Seeds are preserved and prepared; Winter: Seeds are blessed and the people's and plants' ancestors are honored in ceremony.

REPRODUCIBLE 1

NATIVE PEOPLE AND ENVIRONMENT: BACKGROUND

You will learn about the A:shiwi (Ahh-SHE-we) people, one of 562 federally recognized U.S. tribes. The A:shiwi people have farmed the Zuni River Valley region in New Mexico and Arizona for thousands of years, and although their environment has often been challenging, they have been able to grow foods successfully. You will explore the A:shiwi people's relationship with their environment and learn how they, like many Native people, have combined technology developed over thousands of years with modern methods to thrive in a complicated climate and landscape.

Native people lived in the Western Hemisphere for thousands of years before European contact. In North America alone, there were more than 500 diverse Native nations who shared a vast land full of natural resources. To them, the earth was a rich source of food, shelter, and clothing. They cared for the land, because it provided them with all they needed to survive. American Indians today continue to see the same special connection that exists between people and the natural world—viewing themselves as part of the environment, equal with all life.

Native people's ability to adapt to their surroundings has resulted in success that has affected the rest of the world. Native farmers have cultivated more than 300 food crops with many variations. In total, Native people have contributed 60 percent of the crops in global cultivation.

Over the centuries, Native farmers experimented with the types of crops growing on their lands, giving the world cotton, tobacco, maize (corn), potatoes, tomatoes, sweet potatoes, pumpkins, and maple syrup, among others. In the Americas, they developed more than 250 varieties of corn, selecting the strongest seeds that would grow successfully in the most radical weather conditions. Through time and cultivation techniques, cob length and plant size have increased, vastly improving crop yields. Many Native Americans, including the Iroquois people, planted corn, beans, and squash together in a high-yield agricultural method known as companion planting. The three plants, known as "The Three Sisters," are still grown together and honored today. American Indians used corn to develop many types of food, and no parts of the corn plant were wasted. As a result of these agricultural gifts, the economies of many nations now depend on crops first introduced by Native people.

Another important contribution of American Indians is the development of medicines from roots, plants, and trees. In fact, modern pharmacology (the science of drugs) began with the introduction in Europe of the medicine quinine—a Native American cure—for treating the then-deadly illness malaria.

Respecting the Earth

Throughout the U.S., Native people apply their knowledge and skills to the lands on which they live.

- The Mamacqtaw (Menominee) Nation of Wisconsin initiated a sustainable forestry program 140 years ago that is an example of natural forest management at its best. They recognized that their future depended on their forests, and during the years the forestry program has been in use, there has been an increase of 500 million board feet in standing timber volume. In total, the forest has sustained a harvest of more than 2.25 billion board feet.
- The Seminole Nation lives in South Florida near the Everglades, a 100-mile subtropic preserve, and their cultural and religious activities depend on a healthy marshland ecosystem. In 1987, the Seminole Tribal Council formed a Water Management Resource Department to legally protect the quality of the tribe's land and water resources. Today, the tribe has the same authority as the state of Florida to set water quality standards for tribal lands.
- Four **Columbia River Treaty Tribes in Oregon (Nez Perce, Umatilla, Warm Springs, and Yakama)** became concerned about the future of the river's salmon—an essential part of their people's spiritual and cultural identities for thousands of years. Together in 1977 they formed the Columbia River Inter-Tribal Fish Commission, which now employs biologists, scientists, and policy analysts who work in fisheries research, advocacy, harvest control, and law enforcement. They also developed the Spirit of the Salmon Restoration Plan to halt the decline of salmon, lamprey, and sturgeon populations above the Columbia River's Bonneville Dam.
- The Agua Caliente Band of Cahuilla Indians live in an area of the southern California desert that was once considered uninhabitable by outsiders, yet their complex communities thrived in the canyons. Through their innovative dam construction and irrigation systems, they made the land very productive with crops for food and medicines, and plants for basket-making materials. Today, their unique authority over their 52,000-acre reservation enables them to maintain and ensure quality water use on their own lands and the neighboring Palm Springs community.

CONNECTION TO THE LAND

Hayes Lewis, of the A:shiwi Nation, lives just 20 miles from the Arizona border in Zuni, New Mexico. Here, he shares his knowledge about the spiritual connection among the land, his people, and the crops that sustain their lives.

"Agriculture has been an important and constant practice among the A:shiwi people for centuries. We either farm out in the fields or create gardens. Many started [to farm] as children, helping our parents create small gardens. The primary method we use is a waffle garden. If one looks at the garden from an elevated view, its layout resembles a waffle.

"The purpose of the waffle garden is to provide the kind of produce that normally will not grow on a large scale. These plants require more water and constant tending. Waffle gardens are fairly small, and they are usually enclosed. Fences or other forms of protection are usually built around the gardens to protect the plants from rabbits, prairie dogs, or rodents. The fence also provides protection from the wind.

"The elevation at Zuni is approximately 6,800 feet above sea level. Since it is semi-arid, there is not much rainfall. Whenever there is rain, it needs to be captured, which is why berms—raised mounds of earth—are built up around each plant.

"Waffle gardens are specific to families. Different kinds of spices, such as coriander, green onions, garlic, chilies, and sometimes tomatoes, are grown. Several crops of such plants are grown and harvested each season. For example, if coriander and other spices are planted early, in a month or so, when the first crop is harvested, the growing season will allow another crop of spices to be grown and harvested. Some people plant corn in waffle gardens, but corn, melons, and squash are better suited to be grown in the fields.

"When we were growing up, we saw many waffle gardens along the banks of the Zuni River. People quit using this method because the water available from the river was reduced by the Black Rock Dam. Currently, there is a revival



Modern-day waffle garden, Upper Nutria village, Zuni Pueblo.

in gardening—primarily due to the improved water system and renewed interest.

"Seeds are significant in all our cultural practices throughout the year. Two of the most important religious/cultural ceremonies occur during the summer and winter solstices. During the winter, the clans honor the seeds. Representative samplings of seeds are taken to family gatherings and honored along with our ancestors with an offering of sacred cornmeal, songs, and prayer.

"There is a direct, reciprocal connection between the corn and the spiritual practice of the A:shiwi people. Corn is used in the preparation of the sacred cornmeal used by the A:shiwi people for daily prayer and as spiritual offerings to sustain the deities and ancestors. The corn is ground and prepared with special prayers for daily use and for each ceremonial/religious event held throughout the year. Each household maintains a supply of sacred cornmeal for such purposes. During the winter Sha'lako Ceremony, solstice fasting period, and other ceremonies held during the winter period, the seeds are blessed and honored as part of these ceremonies.

"During our ancestors' search for the Middle Place [a physical and symbolic center], they brought with them seeds to sustain life and spiritual practice. Seeds such as corn and those used for sustenance are special because they have the spiritual and collective personal energy and power of our people. Seeds are symbolic of the life cycle; they are symbolic of the ways we must live; and they must be protected and cared for.

"Plants (especially corn) used to sustain life are seen as people and are representative of us. They are honored in prayer songs used during the summer rain dances and described in ways that strengthen the connections between spiritual practice, beliefs, and life."

More About the A:shiwi People

- "A:shiwi" is the term the Zuni people use to refer to themselves or the tribe. "A:shiwi" means "the people" in their language. A:shiwi neighbors include the Hopi, Akoma, and other indigenous inhabitants of the area. In the 1500s, when the Spanish first encountered these indigenous peoples, they called their adobe and stonework towns *pueblos*, the Spanish word for "town." The name "Zuni" comes from a word used by the Akoma people to refer to the A:shiwi people.
- The A:shiwi people and society comprise fourteen matrilineal-extended family clans. The clans are named for living things (e.g., Corn, Sun, and Bear clans).

REPRODUCIBLE 3



EXPLORATORY QUESTIONS

Based on what you have already read about the A:shiwi people and other Native people and their relationship to the environment, answer the questions below. Write on the back of this page if you need more space.

1. Hayes Lewis observes that waffle gardening was used more extensively years ago, but it is being revived today. What do you think is the reason for this change?

4. The A:shiwi people are very respectful of the seeds they use to grow their food. Why? How does that compare with how you think and feel about the foods you eat?

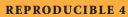
2. The A:shiwi people's irrigation systems are more modern than they were hundreds of years ago. How do you think this might affect their farming methods?

5. Give three examples of ways that Native people have used their knowledge and skills to adapt to the land on which they live.

3. Name two important days of the year when major religious ceremonial events occur. Why do you think these are the most important? At what other times of the year do you think ceremonies might occur, and why?

6. More than forty plants that were first cultivated by American Indians are now grown internationally. Besides corn and the plants listed in Reproducible 1, what other agricultural contributions have Native people shared with the world?

MINI ESSAY: Which two Native food plants have had the greatest global impact, and why? Research and write a one-page essay supporting your answer.



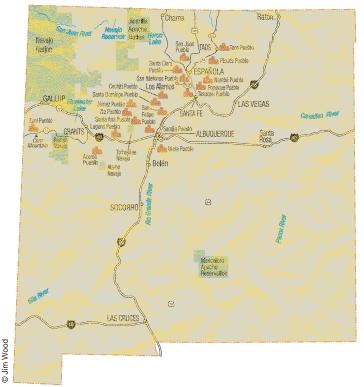
Geography





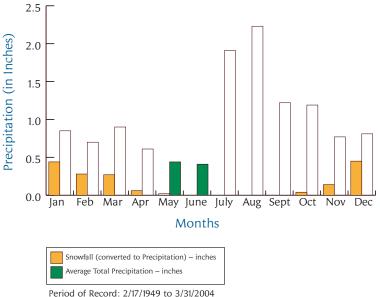
A:SHIWI GEOGRAPHY AND ENVIRONMENT

The A:shiwi people live in Zuni Pueblo. Zuni Pueblo is located in western New Mexico and includes the 90-mile-long Zuni River. The pueblo is a semi-arid, high plateau area with an elevation between 6,000 and 7,000 feet. Rainfall can be erratic from year to year, and the flow of the Zuni River (not pictured on the map below) can be quite limited during dry months. Answer the questions below by examining the map and the precipitation bar graph below and referring to an atlas or other geographic resources as necessary. Write on the back of this page if you need more space.



Map of New Mexico

Average Total Precipitation: Zuni, New Mexico



Period of Record: 2/17/1949 to 3/31/2004 Source: Western Regional Climate Center

Environment

5. Estimate the total precipitation for the year.

6. What does the estimated total precipitation tell you about the region's climate?

3. What are the characteristics of a semi-arid climate?

2. Other than the Zuni River, what bodies of water seem

1. Where in New Mexico is the Zuni Pueblo located?

4. What are the effects of elevation on climate?

within close proximity to the reservation?

7. What percentage of the yearly average precipitation total are the combined totals for July and August?

8. Consult an atlas or other geographical resource that shows rainfall for different parts of the United States. Compare two cities in different parts of the country, such as Washington State and Iowa. How might similarities and differences in rainfall reflect on agricultural practices in the two regions?

REPRODUCIBLE 5

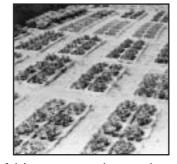
IN BALANCE WITH NATURE

A:SHIWI WAFFLE GARDENING

Waffle gardening is a traditional A:shiwi dry-farming method that makes optimal use of the limited water resources in the A:shiwi people's semi-arid environment. Surrounding each section of the garden are raised borders



of soil (known as berms) that trap and retain moisture. From above, the plots look like waffles, hence the term "waffle



A:shiwi people tending their waffle garden in Zuni Pueblo, New Mexico, more than 75 years ago.

garden." Waffle gardens are fairly compact (measuring about 25 by 40 feet) and can be watered by hand, if necessary. Traditionally, these gardens were grown on the banks of the Zuni River and provided food for a single or extended family. Large-scale crops were grown in fields. Waffle gardening experienced a decline in the late twentieth century but is making a comeback due to new water distribution methods.

A:SHIWI BELIEF SYSTEM AND FARMING

The A:shiwi people, as well as other Native people of the Western Hemisphere, consider all parts of the universe to be connected. Everything is part of the cycle of life, a circle that includes birth, growth, death, and rebirth. The earth's gifts are to be used by all things (people, animals, plants, etc.) to sustain life. The A:shiwi belief system fosters a relationship between the people and their environment, and they strive to achieve balance with nature through various ceremonies and celebrations held throughout the year.

Many Native societies believe that each plant, just like a person, carries a generation of life. Just as we are the descendants of our ancestors, today's plants and seeds are the descendants of theirs. The A:shiwi cycle of planting and harvesting represents the reciprocal life cycle of both the A:shiwi people and the plants that sustain them. The



1926 photo of Zuni Pueblo in New Mexico, showing waffle gardens along the Zuni River.

annual cycle of the A:shiwi people's spiritual practice is connected to the life cycle of all plants. In the winter, the A:shiwi people hold ceremonies to bless the seeds and honor their own ancestors as well as the ancestors of the seeds. In the spring, they plant the seeds with prayer and songs to nourish and strengthen the new life. During the summer solstice and afterward, the A:shiwi people hold a number of ceremonies that are associated with the need for the summer rainy season to begin and continue—without water, the plants and people cannot survive. After the harvest, the A:shiwi people give thanks to the seeds and plants for their life-sustaining food.Thus, by combining their ageold traditions with modern materials and technology, the A:shiwi people continue to survive the challenges of their unique environment.

CRITICAL-THINKING QUESTIONS

Please write your answers on a separate piece of paper.

- 1. Look at the photos of waffle gardens from the past and a modern-day waffle garden. What similarities do you see? What differences might there be?
- **2.** How might the A:shiwi people have adapted their watering methods? How may it affect the planting of crops?



Modern-day waffle garden in Upper Nutria Village, Zuni Pueblo, showing a pump for water.



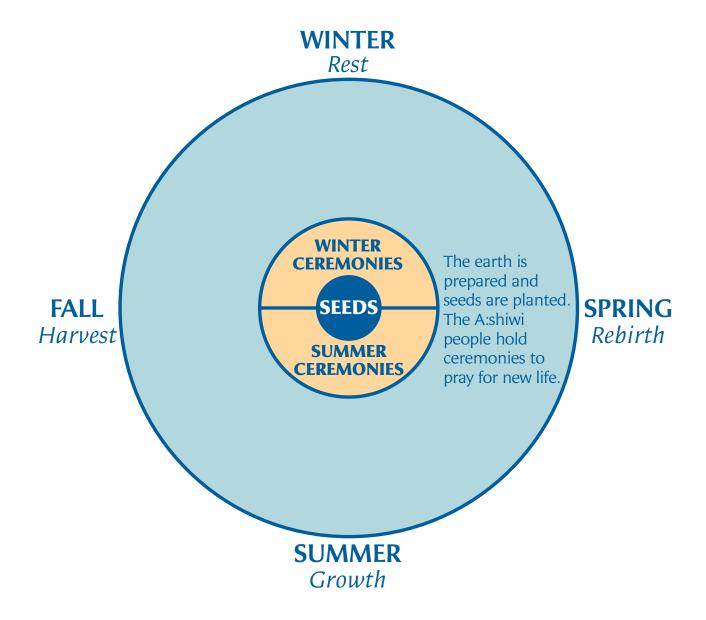
A:SHIWI CYCLE OF LIFE

To American Indians, life occurs in cycles, and the seasons of the earth govern all living things. Ceremonies are held throughout the year to mark each season (or cycle) of the earth and to give thanks for what the earth has provided. For the A:shiwi people, agriculture and ceremony are intertwined in an annual cycle of life. The A:shiwi people care for the seeds and plants as they would their own children, nurturing them and holding ceremonies to bring them the water they need for life. In turn, the plants grow tall and strong, they are harvested and consumed, and life continues for the A:shiwi people. New seeds are preserved and honored for next year's planting. This relationship is described as reciprocal, in that there is an exchange or interaction between each side that affects the other. This reciprocal cycle repeats year after year, generation after generation.

CRITICAL-THINKING ACTIVITIES

1. Using the information on this sheet as well as on previous reproducibles, complete the diagram below to show your understanding of the A:shiwi people's cycle of life. In the outer circle, fill in the agricultural and ceremonial information that corresponds to the time of the year or season. The first one has been done for you. Use another sheet of paper, if necessary.

2. In your own words, explain the reciprocal relationship between the A:shiwi people and their environment as it is shown by your completed diagram.



INDEPENDENT RESEARCH PROJECT

Broaden your understanding of the relationship between Native people and their natural environment by researching another American Indian tribe or group and answering the questions below. When you are finished, create a "cycle of life" diagram (see Reproducible 6) using the information obtained from your research. Use extra pages if you need to. Check out the box below for some useful websites.

What is the name of the Native tribe or group?

What is their Native language?

Where do they live?

In what type of natural environment do they live (forest, wetland, desert, meadow, etc.)?

What is the climate like?

What do they believe are the benefits and challenges of their natural environment?

In what ways have they adapted to the environment?

What type of sustaining crops, products, and food do they depend on?

What types of traditions, cultural ceremonies, and celebrations do they have that relate to their cycle of life and their environment?

Resources

Here are some websites to visit for your research:

National Museum of the American Indian

www.nmai.si.edu

Learn more about the Smithsonian Institution's National Museum of the American Indian, which opened in September 2004. Click on "Exhibitions" to view fascinating online exhibitions.

Indian Circle Web Ring

www.indiancircle.com

Maintained by the Seminole Tribe of Florida, the Indian Circle Web Ring serves to connect all federally recognized American Indian Tribes. Click on "Federally Recognized Indian Tribes" to link to a list of tribal home pages of U.S. Native peoples.

NativeWeb: Resources for Indigenous Cultures Around the World

www.nativeweb.org

This comprehensive site contains wide-ranging information on Native cultures, plus links to Native news and current events, resources, books and music, community, and services.

Native American Sites

www.nativeculture.com/lisamitten/indians.html

Recommended by the American Library Association, this site features information on and links to individual Native nations and their websites. A separate listing for Native languages includes an extensive list of more than 100 Nativelanguage websites.

The Zuni Waffle Garden: A project by A:shiwi A:wan Museum for and by the children of Zuni Pueblo

http://zunispirits.com/wafflegarden.html

View photographs and read about a waffle garden created by the A:shiwi A:wan Museum in Zuni, New Mexico, to help the children of Zuni understand the ways of their ancestors.

Pueblo of Zuni website

http://www.ashiwi.org

Learn about A:shiwi history, culture, and language directly from the A:shiwi people themselves! This site links to the Pueblo of Zuni's Department of Tourism website, which is full of great photos and information.