

## ❖ The Sky Tree ❖

*(Huron—Eastern Woodland)*

In the beginning, Earth was covered with water. In Sky Land, there were people living as they do now on Earth. In the middle of that land was the great Sky Tree. All of the food which the people in that Sky Land ate came from the great tree.

The old chief of that land lived with his wife, whose name was Aataentsic, meaning "Ancient Woman," in their longhouse near the great tree. It came to be that the old chief became sick and nothing could cure him. He grew weaker and weaker until it seemed he would die. Then a dream came to him and he called Aataentsic to him.

"I have dreamed," he said, "and in my dream I saw how I can be healed. I must be given the fruit which grows at the very top of Sky Tree. You must cut it down and bring that fruit to me."

Aataentsic took her husband's stone ax and went to the great tree. As soon as she struck it, it split in half and toppled over. As it fell a hole opened in Sky Land and the tree fell through the hole. Aataentsic returned to the place where the old chief waited.

"My husband," she said, "when I cut the tree it split in half and then fell through a great hole. Without the tree, there can be no life. I must follow it."

Then, leaving her husband she went back to the hole in Sky Land and threw herself after the great tree.

As Aataentsic fell, Turtle looked up and saw her. Immediately Turtle called together all the water animals and told them what she had seen.

"What should be done?" Turtle said.

Beaver answered her. "You are the one who saw this happen. Tell us what to do."

"All of you must dive down," Turtle said. "Bring up soil from the bottom, and place it on my back."

Immediately all of the water animals began to dive down and bring up soil. Beaver, Mink, Muskrat and Otter each brought up pawfuls of wet soil and placed the soil on the Turtle's back until they had made an island of great size. When they were through, Aataentsic settled down gently on the new Earth and the pieces of the great tree fell beside her and took root.



# How Kishelemukong Made the People and the Seasons

(*Lenni Lenape—Eastern Woodland*)

Long ago, Kishelemukong, the Great Mystery, built the world. First Kishelemukong caused a great turtle to rise up from the depths of the water and float on the surface. Then Kishelemukong took moist earth and placed it on the back of the giant turtle as the turtle floated in the endless ocean. The ridges of Turtle's back turned into mountains, and grass and shrubs and trees of all kinds began to grow from the soil.

It went on this way for some time, but Kishelemukong felt that something was yet to be made. There were birds and animals and living things of all kinds, but there was something yet to be made. Kishelemukong considered shaping beings from the stones of Earth. But such beings would be heavy-footed and they would crush the plants beneath them.

Instead, Kishelemukong made a straight ash tree grow up tall. From its branches the first men and the first women sprouted.

Then Kishelemukong placed the sun in the day sky and the moon in the night sky. And so that all would grow and rest in its proper time, Kishelemukong created the four directions and the seasons which would come from each of those directions. West and North and East were Grandfathers, governing the times of Fall and Winter and Spring. South was a Grandmother, bringing the warmth and new life of Summer. Like the trees and the plants, human beings grew to love that time of the year and their Grandmother South the best of all.

Then Kishelemukong decided to make sure the divisions between the seasons were fair and acceptable.

"It will be this way," Kishelemukong said. "Each year there will be a contest between Grandfather North and Grandmother South. They will play the hand game. One will take a bead and hide it in one hand or the other so that the opponent must guess which hand it is held in. Each will have 12 sticks and each time a winning guess is made, one stick will be taken. Whenever Grandmother South begins to win more sticks, the weather will begin to turn warm and Spring will come. But when her luck begins to change, Autumn will be a signal that Grandfather North is winning his sticks back again."

And so it is to this day. Because the game between Grandmother South and Grandfather North is so evenly matched, the seasons are always about the same length, but as in every game, sometimes one of them has better luck than the other and so we never know for sure when each season will end or begin.

## DISCUSSION

### The Giving Plants

Plants are the difference between a living, breathing, green Earth and a stark sphere of dead seas surrounding barren continents of rock, sand and gravel. In the Huron

story "The Sky Tree," everything the people in Sky Land eat comes from the great Sky Tree. Even the fruit that will heal the old chief is borne on the tree's highest branches. As soon as Aataentsic plunges down and steps onto the fresh soil of the new Earth on Turtle's back, pieces of the great tree take root there and the new Earth comes to life.



## ❖ The Thanks to the Trees ❖

*(Seneca—Eastern Woodland)*

(This comes from the traditional Seneca Thanksgiving Address, adapted and translated from a Long Opening Thanksgiving Address given in 1972 by Enos Williams/Quivering Leaves at Seneca Longhouse, Six Nations, Ontario.)

And now we will speak again.

Our Creator decided trees will be on Earth, growing here and there; also forests will be growing of trees, groves will be growing on Earth. And it is still true that trees grow here and there. Our Creator decided this will be something important, for from these trees medicines can come. And certain it is, they are still growing, all of them are different in the way they grow.

Our Creator decided all of the trees will have names, every one of them that people will know them, the people who will live here on Earth. And it is possible that from those trees, within their families, people will grow well. It is possible that people will draw on those trees when it changes, the wind, when it grows colder, the wind. It is possible that then people will be kept warm and they will work together as one, kept warm by that which he left, the live coals on Earth.

Our Creator decided the trees will work together well to bring happiness to families on Earth. And we still think it is coming to pass in this manner. And carefully now, the Creator decided, "The trees will have this one to lead them. People living on Earth will say, 'That tree standing there, the Maple, it is a special tree'."

Our Creator decided "When it becomes warm, the wind, it is then that the sap will flow, so it is that the maple trees will be tapped, from there it will be collected that it may be boiled down by the people. And so then it will be possible for the people to drink the maple syrup again."

And it is possible then that people will be gathered; it is important also that people gather together then. Medicine will be made from the maple syrup, and people moving about, people on Earth will be helped. And when it became warm, the wind, it is true that we saw again this new sap was rising. And it came to pass that we drank the maple syrup again. And it was possible that we were gathered together at what we call Maple Sugar Gathering, the Maple Festival.

And so it is we thank our Creator in the way that he left it we should always thank him at ceremonies. And we think this ceremony has come to pass. Let us put together our thoughts that we will always be grateful, for it is certain that he is sending them to us, the trees which are standing on Earth. We are the ones our Creator thought of; those trees were meant to be used well by those of us moving about on Earth.

Carefully now, it is that we thank him, the one who dwells in the sky, Sonkwaiatison.



## ❖ The Circle of Life and the Clambake ❖

(Wampanoag—Eastern Woodland)

*Everything in life is a circle. Everything is alive—the animals, the birds, the plants of Earth and the plants of the seas, the water, the air and the stones—and everything must be respected. All things are part of Earth, which gives us everything we need. When we take from Earth, we must give back in return. The Medicine Circle is the source of our strength.*

So the Wampanoag people explain the way they have been instructed by the Creator. For untold centuries, the Wampanoag, the People of First Light, have lived along the southeastern coast of Massachusetts. And their traditions and stories relate to that circle of life which human beings must strive to maintain.

One of the heroes of the Wampanoag is a giant whose name is Maushop. Some say he lived there on the narrow land now called Cape Cod even before the Wampanoags arrived. He was not alone, for there were other beings there with him. One of his friends was a giant frog which was his closest companion.

Maushop's life was a good one. He swam in the waters of Popponesset Bay. He made great fires on the sandy beach to cook whales and other sea creatures, and when he emptied the sand into the sea from his great moccasins he made the islands of Nantucket and Martha's Vineyard.

The Wampanoag became the friends of Maushop and he enjoyed helping them. When they wanted to cook or keep themselves warm, he would carry great loads of wood on his back for their fires. When they were hungry he would drive whales onto the shore so that the people did not have to hunt for food. He was so good to the people that they became lazy.

Then Kehtean, the Great Spirit, spoke to Maushop.

"It is good that you care for your younger brothers," Kehtean said, "but it is not right that you do everything for them. They are like little children when you care for all their needs. They must take responsibility for their own lives or they will never grow. If they do not care for themselves, how can they care for the rest of Creation? Their circle will not be strong."

"It is true," Maushop said. Then he said good-bye to the People of First Light. His small friends watched him from the cliffs at Gay Head as he waded into the bay, which was greenish brown with rockweed, and swam away toward the west. As he swam, Kehtean, the Creator, transformed him into a great white whale. Maushop's friend, the giant frog, came to the cliffs, filled with sorrow at the loss of his friend. Kehtean took pity on the giant frog and changed him into a huge stone, which still sits there at Gay Head, looking out to sea. That stone reminds the Wampanoag that Kehtean cares for all things and that the decisions of the Great Mystery are made for the good of all.

Without their friend to help them, the Wampanoag wondered how they would survive. They soon found, however, that when they worked for themselves, everything that they needed was there. One of those ways of survival which makes use of all that is around them—Earth,



the plants, the animals and the water—is called by them *Appanaug*. It is a word which means “seafood cooking,” and, because it is a special part of the circle, it is done to honor someone or to mark the change of the seasons.

With thanks in their hearts and with care, they wade into the shallow waters of Popponesset Bay and collect some of the Rock People, old round stones which have been smoothed by the tide. They find a place in the forest which feels right, and there they make a circle and dig a shallow, round hole in the earth. The stones are then placed in that hole, and the shape of the stone and the shape of that hole remind the Wampanoag of the Medicine Circle of all life.

Dry wood is gathered from the forest. No living trees are used. That way they clear the forest floor and make use of another gift given them by Kehtean.

When the next morning comes, they gather quahog clams from the bottom of the bay and sickissuog clams from the shore when the tide is low. Then, from the shallow water, they gather great loads of a seaweed called rockweed. The rockweed is covered with chambers filled with gas, and the body of the plant contains a great deal of salt water. When the fire for the clambake has burned down to ashes and the Rock People are glowing with heat, that rockweed is piled on top of the stones. Steam begins to rise as the salt water in the plants boils, and the clams, along with lobsters and corn, are piled onto the rockweed and then covered with more armfuls of seaweed. The *Appanaug* is part of the great Medicine Circle of life, one of the gifts of the Great Spirit. So, as the food cooks, the people say prayers of thanksgiving to remember all the gifts they have been given. It is the way it was done long ago and it is still done that way today.

*Note:* A wonderful book about the Wampanoag tradition of the clambake has been written by Russell Peters, a Wampanoag elder whose Indian name is Fast Turtle. A former president of the Mashpee Wampanoag Tribal Council, Fast Turtle tells the story of how he and his grandson, along with other tribal members, prepare one such great feast in his book *Clambake, A Wampanoag Tradition* (Minneapolis, Minn.: Lerner, 1992). A videotape that follows every step of the clambake has also been made. It is called *Appanaug*. It was Fast Turtle who first told us the tale of Maushop and his Wampanoag friends.

## DISCUSSION

Kehtean, the Great Spirit, and the giant Maushop teach the Wampanoag, the People of First Light, about the power of the Medicine Circle in “The Circle of Life and the Clambake.” The Circle of Life is manifest in the many ways human beings can live within and respect the Circle. When Maushop leaves the Wampanoag and wades out into the beds of rockweed growing in the bay off the cliffs at Gay Head, the people must learn to care for themselves and keep their own circle strong. The *Appanaug*, “seafood cooking” or “clambake”—during which corn, lobsters and *sickissuogs* (clams that spit), along with potatoes, onions and sometimes other foods are steamed on seaweed heated by hot round rocks set in a circular hole in **Earth**—reminds the Wampanoag that the giving of work **brings** the gift of survival. Only dry, dead wood is gathered to **make** the fire; the living trees are not harmed. The round stones

and cooking hole symbolize the Medicine Circle of Life. Thanksgiving prayers honor these gifts of the Great Spirit.

## Algae

The rockweed growing in the shallow water that Maushop wades into, and which is used in the *Appanaug*, is a kind of brown algae. Microscopic algae are a principal food of the clams used in the clambake. *Algae*, along with fungi and lichens, are *thallophytes*, which comprise 100,000 of the roughly 375,000 known species of plants and plant-like organisms on Earth. The plant-like algae are often placed in the Kingdom Protocista, along with protozoans and sponges. (See “Classifying and Identifying Plants” in Chapter 2 for a detailed description of thallophytes.)

Algae often reproduce asexually via one-celled microscopic *spores*, by cell division, vegetatively whereby pieces



## ❖ Fallen Star's Ears ❖

*(Cheyenne—Plains)*

Long ago, a woman married a star. She lived in Sky Land for a while, but grew homesick for her people. She made a rope and tried to lower herself and her little baby down to the ground, but her rope was not long enough and she was not strong enough to climb back up. She held on for a time and then fell. It was a long fall and the young woman was killed, but her baby survived.

The birds and animals cared for the boy, and when he was grown, he went to look for his people. Because he came from Sky Land, he became known as Fallen Star, and many things happened to him as he traveled along.

One day, Fallen Star was traveling along in the wintertime. Near dusk, as he was passing through a stand of alders, he saw smoke rising and climbed a hill. From that hilltop he could see a village. Below him, looking down into that camp, stood a very big man. Around that man's neck was a necklace made of human ears.

"I have heard of that man," Fallen Star said. "That is Double Face."

Fallen Star went back down the hill until he came to the stand of trees. He picked the bracket fungus from those trees and shaped them with his knife so that they looked just like ears. Then he strung them about his neck and walked back over the hill to the place where Double Face still stood.

As soon as Double Face saw the necklace worn by Fallen Star, he greeted him. "Friend," Double Face said, "you are welcome. Have you come to help me kill those people in that village below?"

"It will be easy to kill them and take their ears," Fallen Star said. "Do those people know how to kill men like us?"

Double Face laughed. "No," he said. "None of them know that all they have to do to kill me is to trap me so that I cannot run away. Then, if they throw buffalo grease in the fire and shake a buffalo horn rattle I will die."

"Those people are foolish," Fallen Star said, "but I will help you kill them. I will go down and see if they are asleep. If they are asleep, I will make a call like an owl. Then you can creep into that big lodge and take their ears."

"That is a good plan," said Double Face. "I will wait for you to call me."

While Double Face waited, Fallen Star went down into the village. He went into all the lodges and warned the people.

"The one who kills the people and takes their ears is here," Fallen Star whispered. "Make a fire and be ready with buffalo grease and a buffalo horn rattle."

Then Fallen Star made the sound of an owl. Double Face came creeping down into the village and found Fallen Star waiting in front of the big lodge.

"Creep inside," Fallen Star said. "All is ready."



As soon as Double Face was inside the lodge, Fallen Star closed the door flap and laced it tight. Double Face tried to get out, but Fallen Star held the door shut.

"Throw the grease into the fire! Shake the medicine rattle!" Fallen Star shouted.

The people did as he said. As soon as the grease struck the fire it flared up high. Inside the big lodge, Double Face screamed. Then they shook the medicine rattle made of buffalo horn and Double Face's screams stopped. The one who killed the people and took their ears was dead.

Then, because he had other places to go and more things to do, Fallen Star left that village. But ever since then, the fungus which grows on the trees has looked just like human ears.

## DISCUSSION

Deep in the moist forests of North America, growing from dead trees or logs on the forest floor, are the reddish-brown to black, thin, rubbery-fleshed, wavy-edged fruiting bodies of tree-ear fungus (*Auricularia auricula*). At 1 to 6 inches (2.5 to 15.2 centimeters) in diameter, these mushrooms resemble the skin of the outer human ear. Throughout the continent many species of bracket fungi shaped like ears grow from dead trees and shrubs; this is the kind of fungus Fallen Star uses to trick Double Face in the Cheyenne story "Fallen Star's Ears." The trees do, indeed, have ears.

It is not surprising that "Fallen Star's Ears" is a story about a monster who brings death. Fungi are closely associated with dead plants and animals. Human beings, too, go back to Earth when we die. Where a tree grows in or around any burial ground, its roots are likely to be giving new life to those whose remains lie beneath the soil—a tree's version of raising the dead. As trees grow older, fungi will eventually invade their tissues and the trees, too, may fittingly grow "ears"!

## Fungi

Fungi comprise one of the five kingdoms of living things and are considered by many to be unique and distinct from plants and animals. Abundant, diverse and bizarre in appearance, many species of fungi have aptly descriptive names describing appearance or edibility: Earthstar, puffball, shaggy mane, dead man's fingers, Earth tongues, witch's cap, and death cap or destroying angel. There are mushrooms that smell like fish, garlic, green corn, radishes, fruit, raw potatoes, anise, creosote, cucumbers or rotting meat. Mushroom flesh may taste bland or peppery, bitter or delicious. Through a process of genetic analysis, scientists have discovered one individual of the species known as shoestring root rot fungus (*Armillaria bulbosa*), in the hardwood forests of northern Michigan, whose total mass approaches that of an adult blue whale and that is more than 1,500 years old. This massive fungus underlies at least 37 acres (15 hectares) of woodland. As common as they are, so little is known about most North American fungi that their geographical ranges are still a mystery.

People regard fungi with fascination, curiosity, fear and, at times, joy at harvesting one or more of the edible varieties. The language we use to describe fungi expresses mixed feelings. The difference is one of value, as the following quote from a newspaper article reveals as it describes the discovery of poisonous strains of hitherto edible fungi in Russia and Ukraine, whose consumption killed more than 60 people: "An unidentified toxin has apparently infected at least a half-dozen types of normally edible mushrooms turning safe-looking fungi into deadly toadstools."

Fungi cause hundreds of plant diseases and dozens of others that affect animals, including people. Fungal diseases go by many names, including smut, wilt, mildew, rust, gall and late blight. Rusts and smuts infect cereal crops, such as wheat and corn, appearing as black yellow or orange spots on stems and leaves. Blights have caused some of the most famous fungal diseases. The Irish potato famine of 1845–1846, caused by the late blight of potatoes, left more than 1 million people dead and precipitated a mass migration out of Ireland. In the early twentieth century a fungal blight was imported to New York City on chestnut wood from China. One of the biggest and most common native trees on the Mississippi, the American chestnut was virtually wiped out. Only a few small trees and root sprouts remain in certain areas. Mildew is seen as a whitish growth on rose leaves. Black knot gall starts as a velvety swelling on cherry tree twigs and matures in two years as a hard black "knot" up to 2 feet (.6 meter) long. Cloth, walls and paint are all susceptible to mildews. Ringworm and athlete's foot are both human fungal diseases.

However, the benefits fungi bring to human beings and the natural world far outweigh their harmful effects. Fungi

- decompose dead plants and animals to make the nutrient cycle possible, creating the rich soil that supports plant and animal life and releasing carbon dioxide into the atmosphere.
- produce antibiotics, such as penicillin (a kind of mold) and aureomycin.



## QUESTIONS

1. Who decides in "The Thanks to the Trees" that there will be trees on Earth? Why?
2. Why are the trees created? How do people use these trees? How do trees bring happiness to families on Earth?
3. Which tree is chosen as a special tree? How is it special?
4. How are the maple trees thanked for maple syrup and other gifts from these trees? What does "thanksgiving" mean to you?
5. What does "thanksgiving" mean to Native North Americans? How do they celebrate Thanksgivings? How often do they give thanks? Why do they give thanks?
6. How many scales are there on Turtle's back? What do those scales represent to many Native North Americans?
7. What does *celebrate* mean? Why do we celebrate? What is a celebration for? What are the things we do to celebrate? Why would we celebrate plants?
8. What does it mean to appreciate something? How can we show our appreciation for plants?
9. What does it mean to "live in balance" with Earth, with plants and with each other? How can we keep the circles of

giving and receiving strong with plants? What does it mean to live with the next seven generations in mind?

10. What are the circles of life? What are the cycles of nature? Why are they important? Are we a part of these cycles? How can we keep them strong?

11. Why do Native North Americans believe that all life—plants, animals and people—is equal? What rights do plants and animals have? What do you believe about the equality of all life?

12. What does it mean to be connected to other living things? What is "empathy"? How do we show empathy for plants or for people?

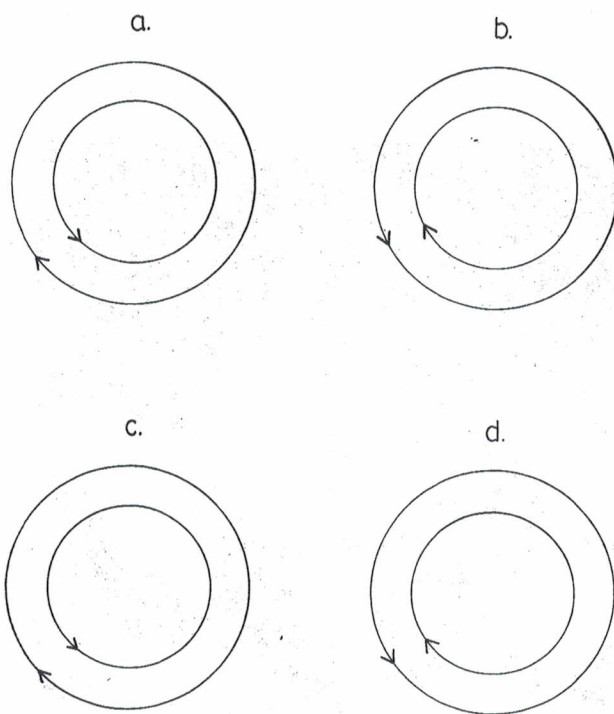
13. How can you best use your senses to relate to other living things?

14. How do you know plants have senses? How do plants sense the world around them?

15. How can you communicate with plants? Do plants respond to human caring? Do people respond to plants?

## ACTIVITIES

### Round Dance of Unity and Thanksgiving<sup>12</sup>



*Figure 4-4. Patterns of movement for leading a group in the "Round Dance of Unity and Thanksgiving." Start the dance by having the inner and outer circles of children move in the directions indicated by the arrows in "a" above. Once the outer circle has completed one full revolution, have the two circles change direction to move as in "b". Both inner and outer circles will change direction each time the outer circle has moved around one full turn. Continue in this way for all four rounds of the dance, through step "c" and on to step "d". The dance is over when the outer circle has completed its final revolution as shown in "d".*

**ACTIVITY:** List the ways we are connected to plants, animals, Earth and other people. Discuss the Native North American Thanksgivings. Perform a round dance to celebrate the unity of all things, to give thanks for all the gifts we receive from Earth, to connect with a small community of people and all people and to honor the circles and cycles of life essential for living in balance.

**GOALS:** Understand the true meanings and practices of Native North American Thanksgivings. Visualize the round dance as a symbol of the unity and interconnectedness of all parts of Earth, living and inanimate; the circles and cycles of nature, including the circle of giving and receiving and its importance to living in balance; and the interconnectedness among people in a small community and people and cultures throughout the world.

**AGE:** Younger children and older children

**MATERIALS:** Chalkboard and chalk or newsprint and felt-tipped markers, copy of Figure 4-4, drum with a head of rubber or leather and drum striker composed of a stick with a piece of cotton-filled felt wrapped and tied over the striking end.

**PROCEDURE:** Beforehand, obtain or prepare a simple, handheld drum with a striker.

Create, on the chalkboard or newsprint, headings for several columns: plants, animals, soil, rain, air (oxygen), etc., including other major parts of Earth the children think of. Ask the children to raise their hands and share ways that we are connected to each of these parts of the Earth. You could ask, for instance, "Where do we get what we need to live?" Then, trace food, drink and other supplies from local markets and farms



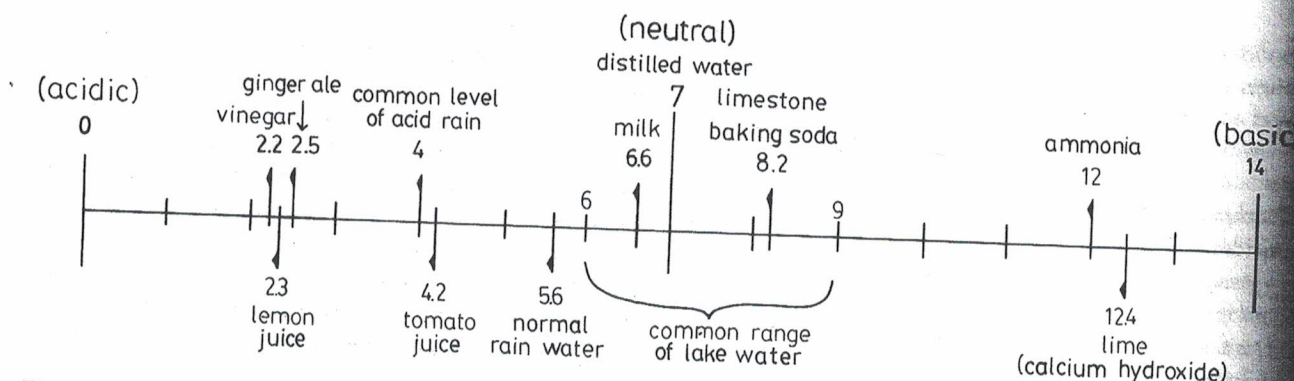


Figure 5-5. The pH scale.

with energy metabolism and enzyme function, causes a mucous covering on gills and can damage kidneys, liver and spleen. Aluminum is naturally present in the soil and lake bottoms. The increased acidity "mobilizes" this metal into solution, where it binds to fish gills and causes suffocation. Heavy metals can inhibit the hatching of fish eggs and cause deformities in the embryonic stages of many aquatic animals. If the waters become too acidic, algae are killed, eliminating the most important food for aquatic life. Fish die along with the algae. Most fish do not eat algae directly, but they feed on animals and other small creatures that need algae to live. Acid rain also dissolves the structures of buildings and cars, eroding away iron, steel, limestone and more.

Waters over hard rocks, such as granite, are most susceptible to acid rain because there is little buffering capacity. Limestone areas are more resilient because limestone acts as a buffer and is able to neutralize acidity.

Many aquatic ecosystems are capable, to a degree, of adapting to the changes brought about by human activities. It is when the frequency and severity of impact persists that ecological damage is done. Wise stewardship of the waters asks each of us to live so as to have a minimal environmental impact and to work toward alleviating the effects of activities that harm the air and water. We can support the creation of clean waters as well as aquatic wilderness areas where oil drilling, fishing, dumping and similar actions are prohibited. By these actions we reciprocate the multitude of gifts that these ecosystems, and the plants that live there, provide us.

## QUESTIONS

1. What does it mean in the beginning of "The Circle of Life and the Clambake" where it says "Everything in life is a circle"?
2. Who are the Wampanoag? What does their name mean? Where do they live?
3. Why does Maushop leave the Wampanoag? How does his leaving help them to take care of themselves? Does anyone expect you to learn how to do something on your own? What is it?

4. To which large group of organisms does the seaweed called rockweed that the Wampanoag use in their clambake belong?

5. What is algae? How do algae feel and smell? Name some kinds of algae.

6. Where do algae live? Have you seen algae growing in the ocean before? Where? Have you seen it growing in freshwater? Where are you most likely to find algae growing near your home or learning center?

7. How do algae reproduce? What is a spore?

8. What do some algae use to swim? How do flagella work?

9. Have you ever eaten algae? In what foods are algae found? What else is algae used for?

10. What are phytoplankton? Why are they important for life on Earth?

11. What is an adaptation? What kinds of adaptations do algae have to survive?

12. How do algae and green plants grow using sunlight? What is photosynthesis? What do green plants produce during photosynthesis?

13. What is chlorophyll? Do all plants that contain chlorophyll look green?

14. What do plants provide animals to live? What is the gas cycle?

15. What is a food chain? What is a food web?

16. What is acid rain? How does it form? What causes acid rain?

17. How are people harming life in salt- and freshwater habitats? What can we do to take care of aquatic life?

## ACTIVITIES

### Alluring Algae



**ACTIVITY:** (A) Visit, observe and experience algae in the natural environments that are available to you: freshwater, ocean and estuary. Collect a few samples for close examination



## QUESTIONS

1. Where does Fallen Star come from in the story "Fallen Star's Ears"?
2. What is Double Face wearing around his neck?
3. What does Fallen Star use to fashion a necklace that looks like ears? How do Fallen Star and the people of the village defeat Double Face?
4. Which kind of fungus is it that, today, looks just like human ears?
5. What is a fungus? What do the fungi that you have seen look like?
6. What are some names we use for different fungi? Do you like fungi? Why or why not?
7. What is a mushroom? What is a toadstool? How do they help fungi to survive?
8. What is a lichen? Which two kinds of organisms live together in a lichen to help each other survive? What is a name for this kind of relationship in nature?
9. What role do fungi play in the soil? What do they do? What is decomposition?
10. What is the nutrient cycle? How does it work? Why is the nutrient cycle important?
11. What kinds of materials can soil fungi and bacteria decompose? Which kinds of material cannot decompose in the soil?
12. Are people part of the nutrient cycle? What do we do with our "waste"?
13. What can people do to be part of the nutrient cycle?
14. What do *you* do to keep from creating too much trash? How can you handle your waste so it is put to good use and not just "thrown away"?

## ACTIVITIES

### The Fungus and the Houseflies



**ACTIVITY:** Perform a puppet show that demonstrates some interrelationships between fungi and both plants and animals; houseflies in this case.

**GOALS:** Understand that fungi use different strategies to survive and reproduce. Discover that there are relationships between fungi and both plants and animals.

**AGE:** Younger children

**MATERIALS:** Paper; cardboard; crayons; felt-tipped markers; scissors; glue; tape; pictures of a housefly, honeybee and common stinkhorn mushrooms (Figures 2-2 and 6-1) for children to use as models for puppets; sticks on which to mount the puppets such as paint stirrers; table and green or brown blanket for stage; props for set (window, tree); script to "The Fungus and the Houseflies."

**PROCEDURE:** Have the children prepare puppets on a stick of two houseflies (first fly is female and second fly is

male), a honeybee and common stinkhorn mushroom (Figures 2-2 and 6-1). Make a few props: one of a window with a third housefly stuck on it and surrounded by a faint white ring (pin mold) on the "glass," and a second prop of a forest tree for the second setting of the puppet show. Set up a stage using a green or brown blanket to suggest the forest floor.

Practice and then perform this puppet show with the children. Encourage the puppeteers to create and adopt voices that they think their insects would sound like.

### THE FUNGUS AND THE HOUSEFLIES

*First Fly* (flying around in front of the window as she tries to get out): I just can't find a way to get outside! The sun is awfully hot on this window. Maybe there's a way out over here. (flies to one side of window) No, afraid not.

*Second Fly:* How about over here? (flies to the other side of window) Not here, either. If we don't find a way out soon we're going to bake.

*First Fly:* What's that over there? (flies over to a third fly that is stuck on the window) Hello, Fly. (waits a moment for an answer) Can't you hear me? I'm talking to you. Oh, no—it's dead!

*Second Fly* (flies over near first fly): What's that white stuff ... wait a minute. ... it's a deadly fungus, a pin mold! Breathe in one spore and we're history!

*Both* (scream): Ahhh! (both start buzzing around frantically) Let us out of here! (A child walks up and "opens" the window, then removes it from the set as flies escape outside.)

*First Fly:* Wow, that was close! Nothing could have saved us if someone hadn't opened that window. I didn't breathe in any spores, did you?

*Second Fly:* No, just lucky. If even one of these spores had gotten inside of me it would sprout and the threads of fungus would have digested me from the inside out. That poor fly. What a way to go.

*Honeybee:* Buzzzz. Hi! Where are you two flies headed?

*First Fly:* No place in particular. We're just winging it. How about you?

*Honeybee:* Someone back in the beehive did a dance that told me there are some flowers, some pollen and nectar, out in this direction. I'm going to collect it and bring it back to the hive.

*Second Fly:* You bees really are well organized.

*Honeybee:* There are the flowers. So long!

*Both Flies:* Bye!

*First Fly:* I'm getting hungry. Let's go look for some food. I'm in the mood for something nice and rotten that really stinks. Mm ... mm.

*Second Fly:* Look down there ... a forest. I'll bet there are lots of dead, rotting things to eat. Let's go. Buzzzz ... (Tree and stinkhorn puppet pop up with the stinkhorn puppet at the base of the tree.) (Both flies fly down to the base of the tree.)