



Dear Teacher,

We're happy to welcome you and your students to Five Rivers Environmental Education Center for an exciting, hands-on **Marvelous Maples Lesson**. This 50-minute lesson has both an indoor and an outdoor portion. To prepare for a successful visit, please read this letter thoroughly and let us know if there's anything we can do to make your visit go more smoothly.

We can accommodate a wide range of student needs from mobility to learning to language. Contact the Guided School Program Coordinator via email at gsp5rivers@outlook.com in advance of your visit so that we may plan accordingly.

Program Overview:

Objective:

To have students experience the forest with all their senses. To teach students to love trees.

Concepts:

1. A tree manufactures food, in the form of sugar, and stores it for use. People can make use of this sugar for food.
2. Forests are important for people and wildlife.
3. Trees can be helped or harmed by people.

Preparations:

Dress for the outdoors. Students will be outside for a large portion of the program. A "Dressing for the Weather" guide is included in this packet. Please review this guide with your students before sending a copy home. Print the "Dressing for the Weather" and "Dear Parent/ Guardian" back to back for the students to take home.

Dressing for the weather is essential this time of year, for students as well as for chaperones. Warm, waterproof boots are a necessity. Two pairs of socks may be worn for extra warmth, but toes should still be able to wiggle inside the boots. (Cramped feet become cold feet.) Wool socks are best; avoid cotton. A warm hat is a must, as are well insulated mittens. (Typically, mittens are warmer than gloves.) Layered clothing allows for maximum flexibility as students can add or remove layers before becoming chilled or overheated.

In the event of severely cold temperatures, the instructor may decide to come back early and conclude the program with an indoor activity.

Prepare parents/guardians by sending home the “Dear Parent/Guardian” letter and the “Dressing for the Weather” guide included in this packet.

Complete the Pre-Visit Classroom Activities prior to your visit. These activities provide background information for your students, presetting them for a successful visit.

Assign at least two adult chaperones to each group of 10 students. All chaperones must be prepared to assist the instructor and participate in the class, as well as administer any medications needed by the students. Chaperones are responsible for discipline, though this is not usually needed. Chaperone guidelines are listed in the “Dear Parent/Guardian” letter.

Plan to bring a snack for each child to be eaten immediately before or during the class. This is especially important if the students’ normal snack or lunchtime will be delayed.

The Guided School Program is provided by Friends of Five Rivers in partnership with DEC. Should you have any questions regarding your upcoming visit, please call or email Friends of Five Rivers. We look forward to your visit and to sharing a unique environmental experience with your students.

Sincerely,

Friends of Five Rivers
Guided School Program
Phone: 518-475-0291
E-mail: gsp5Rivers@outloo.com

Pre-Visit Classroom Activities for Marvelous Maples Lesson

Classroom Preparation Activities

Your forthcoming visit to Five Rivers Environmental Education Center will be much more enjoyable if you prepare your students with these insightful pre-visit activities.

TREE IDENTIFICATION: YOU CAN ALWAYS TELL A DOGWOOD BY ITS BARK

How can you tell one species of tree from another? By their different leaves, of course. But what happens in wintertime when most trees have lost their leaves and all trees look alike?

Have your class look out the window or, if possible, go outside. Do all trees really look alike, even without their leaves? Have the class suggest some ways trees are different.

Shape

Look at tree shapes and silhouettes. Ask students to stand in postures that imitate different tree shapes. Their arms and fingers can be branches, their feet roots.

Bark

Look at the barks of different trees. If outdoors, have the students feel bark with their bare fingers (no mittens) and even sniff it. Challenge them to come up with one word to describe each type of bark: rough, bumpy, smooth, shaggy.

Create bark rubbings; place a piece of thin paper on the tree trunk and rub the paper hard with the side of a peeled crayon. Examine the different patterns made by different kinds of trees.

Twigs

Gather several different types of twigs from trees, one twig for each student. Choose twigs that have big buds. Have students examine their twig. Some twigs have sticky or furry buds. Some have interesting smells. Use hand lenses to find the bud scales, the hard coverings that protect the buds. Look for little whitish polka dots on the twigs; these are lenticels or breathing holes through which the twig receives air. Crush a bud. It will probably be green inside. Even though the twig looks like a dead stick, it's full of life! Inside each bud are next year's leaves. The tree makes food for itself all summer long, and uses the food to make next year's leaves, which spend the winter tiny and hidden beneath the hard bud scales till the warmth and light of spring signal them to start growing. Look at the position of the buds. Are the side buds opposite each other? Or are they placed alternately on the twig? Most trees have alternate buds. But maples have opposite buds, which are small (less than ¼ inch) and are the color of dark maple syrup. If you bring your twigs to Five Rivers when you come for the maple class, we'll be glad to help you identify your twigs. Lastly, steal a march on spring. Put the twigs in a glass of water in a warm place. Wait a few weeks. Soon, some of the twigs will be fooled into "thinking" that the warmth of your room is springtime, and some buds will burst forth with green leaves!

SOME CLUES FOR TWIG DETECTIVES

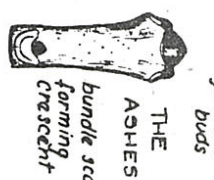
Curious Naturalist Supplement, No. 6
 Massachusetts Audubon Society
 South Lincoln, Massachusetts

TREES WITH OPPOSITE BRANCHING

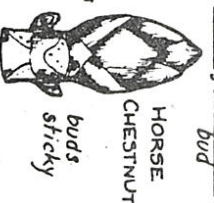
BUDS 1. Smooth buds, crescent-shaped leaf scars with 3 bundle scars



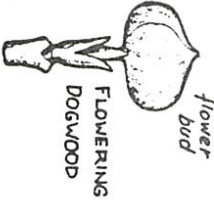
2. Rough, dry buds



3. Large terminal bud

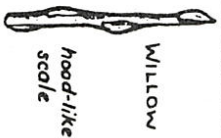


4. Onion-shaped flower bud

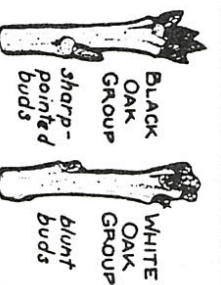


TREES WITH ALTERNATE BRANCHING

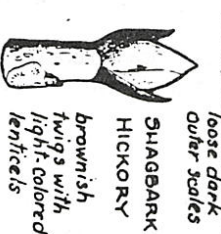
BUDS 1. Single scale



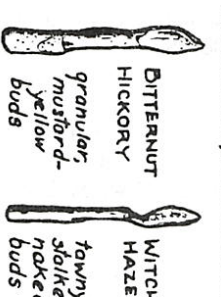
2. Clustered terminal buds



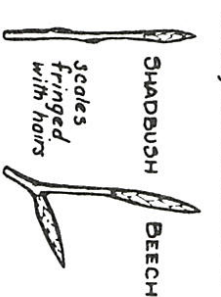
3. Large end bud with loose dark outer scales



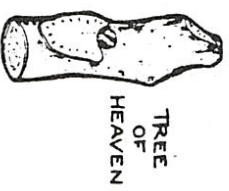
4. Flattened, yellowish buds



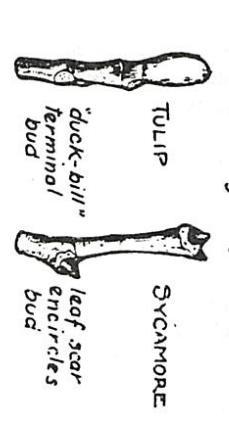
5. Long, narrow buds



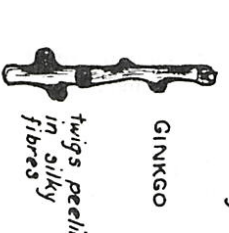
TWIGS 1. Thick twig, thick pith



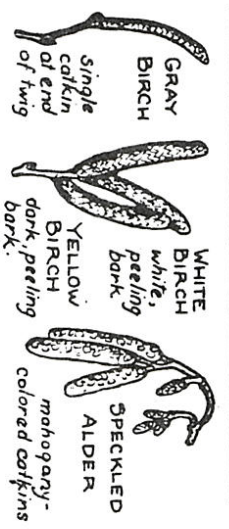
2. Line encircling twig at each node



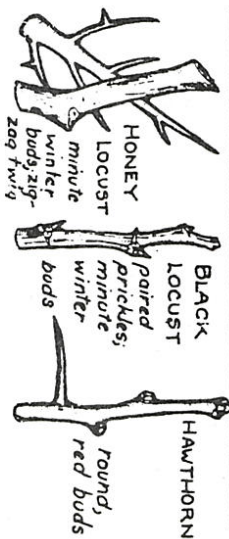
3. Knob-like twigs



CATKINS in winter



THORNS



New York State
 Department of Environmental Conservation

Pre-Visit Classroom Activities for Marvelous Maples Lesson Continued

BACKGROUND INFORMATION: HISTORY OF MAPLE SUGARING

The Native American Indians of northeastern America were the first people to discover the secret of the maple's sweet sap. The Algonquin Indians of New York State called maple sugar *sinzibuckwud*, or "drawn from wood," and *sinzibuckwud* time was a season of rejoicing among many tribes of Indians, celebrated with songs and dances. Groups of Indians would camp out in maple groves and spend weeks in February and March boiling large amounts of maple syrup and sugar. *Sinzibuckwud* time meant that the hard winter was almost over and spring was just around the bend.

The Native Americans had no metal until the coming of the European settlers, so they used the natural materials they found in the forest around them. They cut gashes in the bark of maple trees and caught the sap that dripped out in birch bark baskets. They boiled the sap in hollowed-out logs, using wooden paddles to stir it. The sap was brought to a boil by adding heated rocks to the sap. It was hard to keep syrup without glass or metal containers, so whatever syrup wasn't eaten immediately was boiled further till it turned to sugar and was packed in baskets.

When the European settlers came to America, the Indians shared with them the maple's secret. The colonists realized that the supply of sugar maples suitable for tapping was limited, so they introduced the system of drilling a small hole and inserting a spout, instead of gashing the tree. This way fewer trees died and so could be tapped over again next year. Metal spouts (also called spiles), buckets, hooks, and pots made the sugaring process easier and were adopted by many Indians as well.

Today, backyard maple sugaring, and the simple sugaring you will see at Five Rivers, use basically the same process the first settlers did. A hole is drilled in a mature maple tree, a spile is inserted, and the sap drips out into a bucket. Buckets are periodically dumped into an evaporator, a large pan or pot, over a wood fire. As the sap boils, the water rises off as steam, and what is left behind is the concentrated tree sugar that tastes so good on pancakes.

Large commercial operations may use gas powered evaporators or plastic bags and tubing instead of buckets and spiles. But the process remains the same. And each sugaring operation, large or small, starts with the same key ingredient; a grove of healthy, mature sugar maple trees. But maples are very susceptible to being harmed by pollution such acid rain. Many roadside maples have been killed by the application of salt to roads in icy weather. A maple should not be tapped until it is approximately 40 years old! So, a maple tree, once damaged by careless human use or pollution, is not easily replaced.

Pre-Visit Classroom Activities for Marvelous Maples Lesson Continued

HOW MAPLE SYRUP WAS DISCOVERED: AN IROQUOIS LEGEND

The Indians of New York State had many entertaining stories and legends to explain the delicious maple syrup that was such an important part of their lives. Here is an Iroquois tale. As you tell this story aloud, perhaps the class could act it out. Assign one student to play Woksis, one to play Moqua, and the rest of the class to be members of the tribe.

Long, long ago, the first Indians had no source of sugar or anything sweet—they never ate candy, syrup, or deserts. Until one day in March, when an Iroquois chief named Woksis decided to go hunting. He picked up his bow and arrows and tomahawk, and was ready to leave when his wife, Moqua, stopped him. She asked him to go to the stream and fill a birch bark pot with water for cooking that night's dinner. Then she went off into the forest to gather acorns.

Woksis was very angry when she asked him for this favor, because cooking was traditionally a woman's job. He was so angry he threw his tomahawk at the pot! It missed the pot and hit the maple tree that the pot sat under. The tomahawk stuck quivering in the bark, and sap dripped from the cut. Then Woksis stamped off to hunt.

Now it so happened that some of the sap from the cut dripped into the birch bark pot. Later that day, Moqua came back from the forest with a heavy basket full of acorns. She was tired and glad to see that the pot was full of liquid and ready to make dinner in. She put a piece of venison in the pot and boiled it by putting rocks heated in a fire in it.

Woksis came home from an unsuccessful hunt and was still angry as he sat down to eat dinner. But as he took a bite of the venison, a smile broke out on his face. It was the sweetest thing he had ever tasted! Woksis and his wife realized that it was the maple sap that had such a wonderful flavor.

Now all the tribe enjoyed the taste of maple syrup. Back in these early days, the sap of the maple was a thick and sweet as syrup. All the Indians had to do was make a gash in the bark of the maple tree, and the stand with their mouth open and let syrup drip in. The tribe became very lazy and fat. They spent no more time hunting or gardening—all they wanted to do was lie under maple trees and drink sweet sap.

The Great Spirit looked down from his home in the sky and saw how lazy the tribe had become. He sent a great rain. It rained and rained for many days and nights. And it was a magic rain, for it entered the maple trees at the tips of the branches and filled them up with water. The next time the Indians tasted maple sap it was watery and barely sweet. They had to boil off the water with much toil and effort. That is why even today maple sap looks and tastes almost like water- we have to boil it to make it taste sweet and thick. But we, like the tribe Woksis, are still grateful for the sweet gift of the maple.



Friends of Five Rivers Guided School Program

Marvelous Maples Lesson



Department of
Environmental
Conservation

Dear Parent/Guardian,

Your child will soon be visiting Five Rivers Environmental Education Center to learn about the natural environment. We are delighted to welcome you and share these ideas to ensure an enjoyable visit.

Help your child dress for success. (See “Dressing for the Weather” diagram on reverse side.)

- Trails may be snowy, so students should wear appropriate footwear.
- Long pants are recommended throughout the year. Dress in layers.
- Bring rain gear if there may be rain. The lesson is geared for the out-of-doors!
- Bring a water bottle.
- In cold weather, hats, mittens, coats and warm boots are a must.

Chaperones are an important part of this program.

- Encourage all students to participate in class activities and be part of them yourself.
- Your help with discipline and safety is vital for a successful visit.
- Dress appropriately for the weather. Follow the guidelines provided for the students noted in “Dressing for the Weather.”
- Remain attentive to the lesson. Please save personal conversations for later.
- Do not use cell phones except in an emergency. Picture taking is at the guide's discretion.
- Above all, enjoy this experience along with the students.

Reminder


After all outdoor activities—whether at home, school or Five Rivers—a thorough tick check should be performed on children and adults.

The Guided School Program is provided by Friends of Five Rivers in partnership with DEC.

We look forward to seeing you and/or your child at Five Rivers and hope it will be a fun-filled and exciting experience. Please contact us if you have any questions, or if you or your child have special needs. We will be happy to talk with you.

Sincerely,

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Guided School Program
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E-mail: gsp5Rivers@outlook.com



Dressing for the Weather

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