FIVE RIVERS ENVIRONMENTAL EDUCATION CENTER

NEW YORK STATE | Department of Environmental Conservation

Friends of Five Rivers

Guided School Program

MARVELOUS MAPLES – before your visit

Hello!

We're glad your class will be visiting Five Rivers for a **Marvelous Maples** program. This 50-minute lesson will be conducted entirely outdoors. To prepare for a successful visit, please read this letter thoroughly. Keep in mind that we can accommodate a wide range of physical challenges or learning disabilities (i.e. physical, cognitive, ENL, etc.). Let us know if any of your students have special needs so that we may prepare for an enjoyable visit.

Should you have any questions regarding your upcoming visit, please email Friends of Five Rivers at gsp5rivers@outlook.com. We look forward to your visit, and to sharing a unique environmental experience with your students. See you at Five Rivers!

Program Overview:

The Marvelous Maples program will introduce your students to the importance of trees to our environment. Your students will discover that:

- A tree manufactures food, in the form of sugar, and stores it for use. People can make use of this sugar for food.
- This process of making maple syrup involves obtaining tree sap, which contains sugar, and boiling the sap removes excess water.
- Trees can be helped or harmed by people.

Share and Prepare to Ensure Success - to be shared with all staff attending:

- ✓ **Dress for the outdoors**! A "Dressing for the Weather" guide is included in this packet. Review proper dress with your students before sending a copy of this guide home.
- ✓ **Prepare parents/guardians** by sending home the "Dear Parent/Guardian" letter included in this packet. Copy this letter on the back of "Dressing for the Weather" to save paper!
- ✓ **Complete the pre-visit classroom activities** prior to your visit. These activities provide background information for your students, presetting them for a successful lesson.
- ✓ **Assign at least two adult chaperones to each group of 15 students**. All chaperones must be prepared to assist the instructor, participate in the class, and administer any medications needed by students. Chaperones are also 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 eat immediately before or during the class. This is especially important if the students' normal snack or lunchtime occurs during the lesson time.

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Pre-Visit Activities for Marvelous Maples

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.

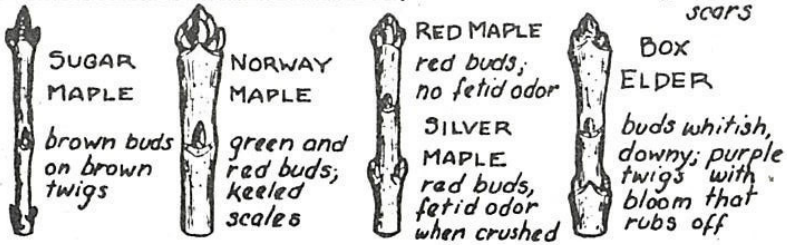
Lastly, steal a march on spring. Put the twigs in a glass of water in a warm place. Wait a few weeks. Soon, some of the twigs will be fooled into "thinking" that the warmth of your room is springtime, and some buds will burst forth with green leaves!

SOME CLUES FOR TWIG DETECTIVES

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

TREES WITH OPPOSITE BRANCHING

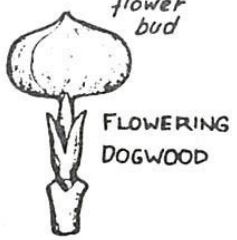
BUDS 1. Smooth buds; crescent-shaped leaf scars with 3 bundle scars



2. Rough, dry buds

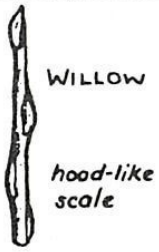
3. Large terminal bud

4. Onion-shaped flower bud

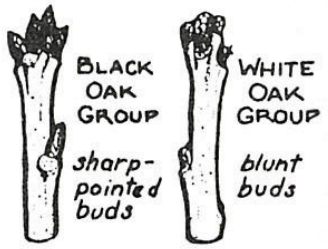


TREES WITH ALTERNATE BRANCHING

BUDS 1. Single scale

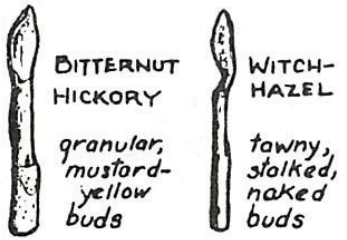


2. Clustered terminal buds

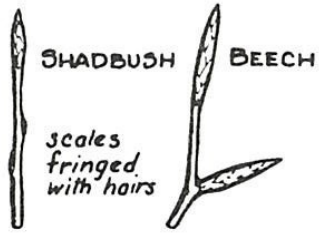


3. Large end bud with loose dark outer scales

4. Flattened, yellowish buds

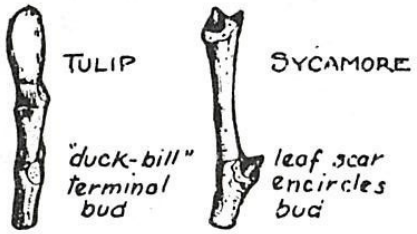


5. Long, narrow buds



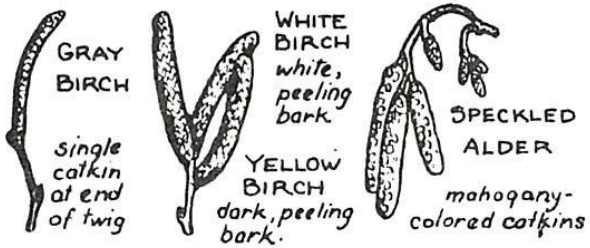
TWIGS 1. Thick twig, thick pith

2. Line encircling twig at each node

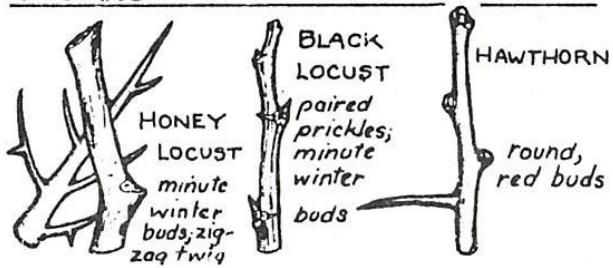


3. Knob-like twigs

CATKINS in winter



THORNS



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 sap to make 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.

Additional Resource:

Wilder, L. I. (1998). *My first little house books: Sugar snow*. HaperCollins.

> This picture book is an illustrated adaptation from *Little House in the Big Woods* and presents early American methods of maple sugaring.

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 of Woksis, are still grateful for the sweet gift of the maple.

Take Home Page Guided Lesson

Dear Parent / Guardian,

Your child will soon be visiting Five Rivers Environmental Education Center to learn about the natural environment and the wildlife within it. We're delighted to welcome your child and share these ideas to make the visit more enjoyable.

Dress for Success:

- Hats, mittens, coats and warm boots are a must. Trails may be wet or muddy, so students should wear appropriate footwear.
- Long pants are recommended throughout the year.
- Bring rain gear if there maybe rain. The lesson is geared for the out-of-doors!
- Bring a water bottle.

Chaperones: You are an important part of this program!

- Encourage students to participate in class activities and be part of them yourself by helping them along the way.
- You are responsible for discipline and safety which are vital for a successful visit.
- Dress appropriately for the weather. Follow the guidelines provided for the students.
- Remain attentive to the lesson. Save conversations for outside the class.
- Be prepared to administer student medications as communicated by the school.
- Do not use cell phones except in emergency.
- Encourage students to watch animals quietly and at a respectful distance, for the safety of all.
- 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.

We look forward to seeing you and your child at Five Rivers and hope it will be a fun-filled and exciting experience. Please call Five Rivers Environmental Education Center at 518-475-0291 if you have any questions or if you or your child have special needs; we will be happy to talk with you.

Sincerely,

Friends of Five Rivers: Guided School Program
56 Game Farm Road, Delmar, NY 12054
Phone: 518-475-0291
E-mail: gsp5rivers@outlook.com

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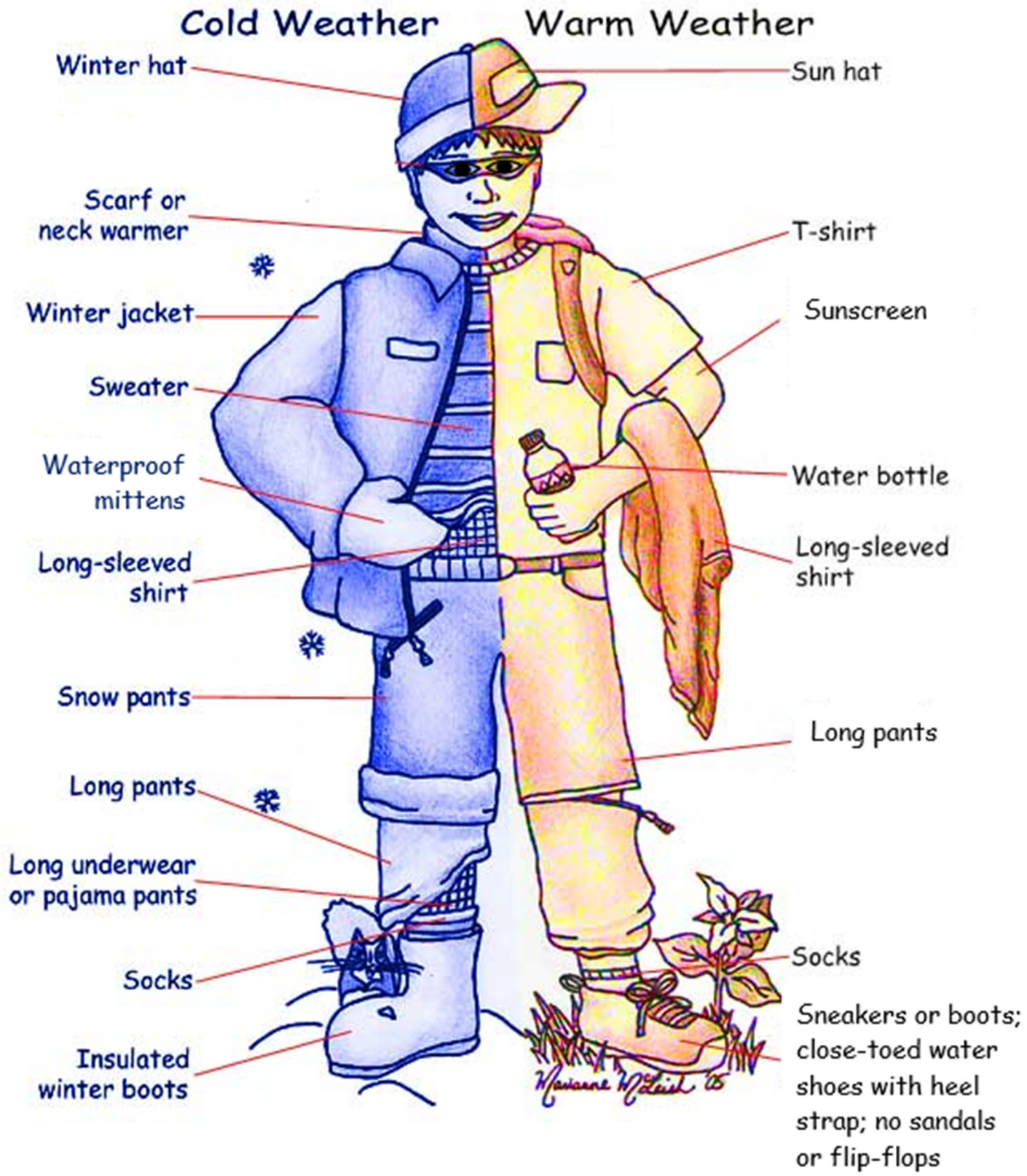
DRESSING FOR THE WEATHER



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