Parent Outline: 6 & Up **February: Maple Syruping**

Welcome/ Introduction: Staff/Volunteer Names **Today's Topic-Maple Syrup Making**
Question: What does it take to produce larger quantities of maple syrup?

Ice Breaker: **Maple Syrup Matching**

Background/ Exploration: **History of Maple Syruping**-Tell a Native American syruping legend.
Describe the various traditional forms of maple sugar: Grain, Cake, Wax
Maple syrup is maple tree sap boiled down to 1/35th of its original volume.
Share about pioneer adoption and adaptation of sugaring methods.
Geography of Syruping-Sap only runs sweet under the right weather conditions, which occur in the Northeast U.S. and Canada.

Activity: **Syrup Math-**Based on 40 gallons of sap for one gallon of syrup and an average of 10 gallons produced per tree, how many maple trees would you need to produce 10 gallons of syrup in one season?

Parts of a tree
Sap production-Describe photosynthesis and the sugars produced and stored.

Maple tree identification basics-
There are several species of maple tree- Sugar, Silver, Box Elder, Norway, and Red. The Box Elder (Ash-leaved maple) has three leaflets, not the typical Canadian flag type maple leaf. Sugar maples have the highest amount of sugar in their sap, and are the preferred trees for syruping. Red Maples and Box Elders have less sugary sap, so it takes longer to boil down to syrup. Norway Maples and other ornamental maples have milky sap, and are unsuitable for tapping. In Iowa, Silver Maples and Box Elders tend to be numerous along streams & rivers. They are a good source of sap when using existing trees.

Trail Talk: **What we will do/What to look for-**Find areas where maples naturally grow.
Learn about how to manage and maintain a healthy sugar bush

OUTDOOR EXPLORATION: Hike through the floodplain, practice identifying various maple species.
Where are maple trees abundant?
Walk into the sugarbush and discuss management for syrup production.
(thinning trees, planting saplings, clearing brush, etc.)
Discuss the signs of the beginning of sap flow/syruping season:
Crows cawing, Warmer weather, Melting ice and faster flowing streams
Time to clear a path through snow, and clean out dead brush, branches.

Activity: **Tap a Tree-**
Cover tapping rules-Don't tap near old tap holes, tree needs to be 10" or more in diameter, tapping on the south/sunny side of the tree will gain you more sap
Discuss & show modern methods of syruping-tubing, pipelines, etc.

Visit the sugar house where sap is boiling.
Learn about boiling and finishing techniques.
Syrup will spoil if not boiled enough, crystallize if boiled too long
Discuss & show what would be needed to produce maple syrup for sale.
The syrup needs to be boiled to the right density, filtered, graded, and hot-packed at a temperature of at least 180 degrees F in sterile containers.

Kinds of sugar products that can be made-
Maple Syrup, Maple Candy, Hard Maple Sugar, Maple Cream, Indian Sugar

Discuss the end of syruping season, duties and cleanup of equipment.

Game: TBA

Closing: Give the students a taste of pure maple syrup or another maple product.

Send Off: Goodbye!
Next Month-Soil Conservation

Take Home: Parent Outline
Maple syrup recipes
Syruping crossword or word search

Vocabulary

Sugarbush, spile, cambium, heartwood, sapwood, xylem, phloem, hydrometer, evaporation, tap, mokuk, photosynthesis, brace & bit, arch, yoke

Background and Activity References

http://www.extension.umn.edu/distribution/naturalresources/DD1067.html backyard syrup basics
http://www.extension.umn.edu/distribution/naturalresources/DD6286.html Maple tree identification
www.forestry.iastate.edu/ext/pubs/F-337.pdf Syrup production in Iowa
www.goshen.edu/merry/ea/sugar/physics.htm Physics of syruping
http://members.iquest.net/~childers/maple/hist.html History of syruping
Search "maple syrup" on the Internet for lots more information on how-to, recipes, & products

Caduto, M. J., and J. Bruchac. 1989. *Keepers of the Earth: Native American Stories and Environmental Activities for Children*. Fulcrum, Inc. Golden, CO. P. 145 Maple Syrup legend

Corbin, Devin. 2004. "Twilight of the Sugar Maples". *Utne*, LENS Publishing Co., Inc. Sept/Oct. pp. 36-41

Frost, Frances. 1950. *Maple Sugar for Windy Foot*. McGraw-Hill, NY. From a series told from a New England farm pony's perspective.

Gokay, Nancy Hatch. 1980. *Sugar Bush-Making Maple Syrup*. Hillsdale Educational Publishers, MI. Photos of syruping process and recipes

Hauser, Susan C. 1997. Sugartime: *The Hidden Pleasures of Making Maple Syrup*. The Lyons Press,??

Keller, Kristin Thoenns. 2004.*From Maple Trees to Maple Syrup*. First Facts Books, ?? Book for ages 9-12

Making Maple Syrup: A Beginner's Guide. 1980. Garden Way Bulletin A-51. Garden Way Publishing, Charlotte, VT. Description of syruping process and how-to for three different levels of production.

Mann, Rink. 1978. *Backyard Sugarin'*. The Countryman Press, Woodstock, VT. Many photos of equipment for small-scale syrup production

Lockhart, Betty Ann. 1990. *The Maple Sugaring Story*. Vermont Maple Promotion Board, Charlotte. Pp. 11-12 Pure Maple Products; p. 23 syruping steps; describes the sugaring process; includes activities for all students; photos and diagrams of syruping and equipment

Glatz, Richard. 1978. *Teacher's Guide to Maple Syruping Programs*. Riveredge Nature Center, Ashland, WI.

Sloane, Eric. 1962. *Diary of an Early American Boy*. Ballantine Books, NY.

Options for producing maple syrup (Garden Way)**:**

Complexity	# of trees/taps	Amount of Syrup	Equipment	Cost
Level 1	1-5	1-3 quarts	spiles Hand drill 7/16" bit (1/2") clean milk jugs or buckets outdoor fire or wood stove	$10.00
Level 2	12	5-10 gallons	spiles Hand drill & 7/16" bit covered sap buckets or bags large flat-bottomed pan outdoor fire or wood stove hydrometer skimmer filter (paper) grading set syrup containers	$300.00
Level 3	60-200	15-50 gallons	spiles drill & 7/16" bit covered sap buckets or bags sap evaporator sugarhouse hydrometer skimmer filter (felt) grading set syrup containers	$2000.00

To make Maple Syrup you need:
The right climate-New England into the Midwest.
Freezing nights and warm (40d +) sunny days in late winter/early spring (Late February through March).
Maple trees at least 10" in diameter.
Tree tapping and sap collecting equipment.
A stove/fire and large kettle or flat pan to boil down sap into syrup.
Containers to store the syrup in.

Syruping equipment can be very simple, or more complicated if you are producing large amounts.