



## Maple Sugaring

### What to Expect

Our two-hour *Maple Sugaring* Program at the Green Mountain Audubon Center is designed to provide students with opportunities to learn first-hand about the Vermont tradition of maple sugaring from tapping to tasting in our active sugarbush. Guided by a professional Teacher/Naturalist, you will take a hike through the sugarbush stopping to tap a tree, taste and collect sap, and see the process Native Americans used to make syrup. Everyone will also get a chance boil sap in a mini-evaporator, see and learn about sugaring tools, visit our big sugarhouse, and –of course - do a taste test of different grades of maple syrup.

### Essential Question and Understandings



#### What is maple syrup and how is it made?

- What is sap? Why and how does it move through trees?
- What is unique about a sugar maple tree and how does it change through the seasons?
- What is a sugarbush?
- What is it like in a sugarbush and sugarhouse in Vermont during sugaring season?
- How do people make maple syrup from sap and how has this process changed over time?

### Vermont Grade Expectations

**S1-4: Scientific Inquiry** – Students ask questions and make hypotheses about, observe, and help with the process of turning sap into syrup.

**S12: States of Matter** – Students informally observe the properties of liquid sap (color, fluidity, taste, density, temperature) and steam (color, movement, temperature, density, smell).

**S14: Physical Change** – Students observe that heating evaporates liquid water in sap into steam.

**S49: Natural Resources** – Students have direct experience with seeing that maple syrup is made from sap that is extracted from trees by helping to tap, gather, and boil sap.

**H&SS8: Connect the Past with the Present** – Students see how the process of sugaring has changed over time by comparing traditional Abenaki boiling methods to modern tools and systems (taps, buckets, lines, evaporators etc).

**H&SS12: Human Interaction with the Environment over Time** – Students observe how the forest at the Center has been managed by people to be a sugarbush for many years.

### Key Words

- |                |                  |                 |                 |
|----------------|------------------|-----------------|-----------------|
| 1. Sugar maple | 6. Sugaring      | 11. Sap bucket  | 16. Density     |
| 2. Trunk       | 7. Sugarbush     | 12. Maple syrup | 17. Hydrometer  |
| 3. Roots       | 8. Tapping       | 13. Sugarhouse  | 18. Crystallize |
| 4. Crown       | 9. Bit and brace | 14. Arch        | 19. Drawing off |
| 5. Sap         | 10. Spile        | 15. Evaporator  | 20. Grade       |

\*\*\*We are trying to reduce our carbon footprint. Please visit [www.vt.audubon.org/schoolPrograms.html](http://www.vt.audubon.org/schoolPrograms.html) to download suggestions for **Pre- and Post-trip Activities** to do in your classroom as a complement your trip to the Green Mountain Audubon Center. Hardcopies can be mailed upon request.



## Recommended Resources for Maple Sugaring

### Children's Books

- Burns, Diane. *Sugaring Season: Making Maple Syrup*. Minneapolis: Carolrhoda Books, 1990.
- Carney, Margaret and Janet Wilson. *At Grandpa's Sugar Bush*. Buffalo, NY: Kids Can Press, 1998.
- Chall, Marsha Wilson. *Sugarbush Spring*. New York: Lothrop, Lee and Shepard Books, 2000.
- Crook, Connie and Scott Cameron. *Maple Moon*. Fitzhenry & Whiteside, Limited, 1999.
- Ehlert, Lois. *Red Leaf, Yellow Leaf*. New York: Harcourt Brace Jovanich Publishers, 1991.
- Gibbons, Gail. *The Missing Maple Syrup Sap Mystery: Or, How Maple Syrup Is Made*. Penguin Young Readers Group, 1979.
- Haas, Jessie. *Sugaring*. New York: Greenwillow Books, 1996.
- Lasky, Kathryn. *Sugaring Time*. New York: Macmillan Publishing Co., Inc., 1983.
- Linton, Marilyn. *The Maple Syrup Book*. Toronto: Kids Can Press, 1983.
- London, Jonathan. *The Sugaring- Off Party*. New York: Dutton Children's Books, 1995.
- Reynolds, Cynthia Furlong. *M is For Maple Syrup: A Vermont Alphabet*. Chelsea, MI: Sleeping Bear Press, 2002.
- Ring, Susan. *From Tree to Table*. Coughlan Publishing, 2002.
- Rossiter, Nan Parson. *Sugar on Snow*. Penguin Young Readers Group, 2003.
- Waterman Wittstock, Laura. *Ininatig's Gift of Sugar: Traditional Native Sugarmaking*. Minneapolis: Lerner Publications Company, 1993.
- Wilder, Laura Ingalls. *Sugar Snow*. HarperCollins Children's Books, 1999.

### Teacher's Resource and Activity Books

- Gokay, Nancy Hatch. *Sugar Bush – Making Maple Syrup*. Michigan: Hillsdale Educational Publishers, 1980.
- Lawrence, James M. and Rux Martin. *Sweet Maple*.
- Lockhart, MaryAnn. *The Maple Sugaring Story: A Guide for Teaching and Learning about the Maple Industry*. Charlotte, VT: Vermont Maple Promotion Board, 1990. \*\*\*Written as a complement to the video *The Maple Sugaring Story*.
- Nearing, Helen and Scott Nearing. *The Maple Sugar Book*. New York: Schocken Books, 1970.
- Parella, Deborah. *Project Seasons: Hands-on activities for discovering the wonders of the world*. Shelburne, VT: Shelburne Farms, 1995.
- Peck, Jill L. *Maple Sugaring in Vermont: A K-8 Standards-based Unit of Instruction*. Vermont Agriculture in the Classroom. \*\*\*Download for free from [www.vt-aitc.org/pdfs/full-Maple-Unit.pdf](http://www.vt-aitc.org/pdfs/full-Maple-Unit.pdf)
- Perrin, Noel. *Amateur Sugar Maker*.

### Additional Resources

- Vermont Sugarmakers Association. [www.vermontmaple.org](http://www.vermontmaple.org) Includes curricula and videos for teachers to download.
- Vermont Department of Forests, Parks & Recreation. [http://www.mapleinfo.org/htm/products\\_sugaring.cfm](http://www.mapleinfo.org/htm/products_sugaring.cfm) Sugarbush management information, maple trivia, maple field guide.
- UMaine Extension. *How to Tap Maple Trees and Make Maple Syrup*. <http://www.umext.maine.edu/onlinepubs/PDFpubs/7036.pdf>
- Cornell Sugar Maple Research and Extension Program. [maple.dnr.cornell.edu](http://maple.dnr.cornell.edu) FAQ, student activities, coloring book, recipes and more!