Northern Woodlands

Autumn 2001

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NORTHERN WOODLANDS MAGAZINE

802-439-6292

www.northernwoodlands.com

Editorial Mission

To inspire landowners' sense of stewardship by increasing their awareness of natural history and the principles of conservation and forestry that are directly related to their land.

To encourage loggers, foresters and purchasers of raw materials to continually improve the standards by which they utilize the forest's resources.

To increase the public's awareness and appreciation of the social, economic and environmental benefits of a working forest.

To raise the level of discussion about environmental and natural resource issues.

To educate a new generation of forest stewards.

Please allow your students to keep their copy of each edition of the magazine, and encourage them to share what they have learned with their families.

Teacher's Guide

A Note to Teachers

Welcome to the Autumn 2001 issue of *Northern Woodlands*. School is back in full swing, and in this issue, you'll find articles on subjects ranging from population ecology to wood weirdness, offering plenty of fodder for classroom discussion. Be sure to take a look at the feature article on the Northern Woodlands Goes to School Program, which provides this magazine and teacher's guide to you and many other teachers throughout the Northeast.

This teacher's guide serves as a companion to *Northern Woodlands* magazine. In it are several in-class and outdoor activities that expand upon ideas presented in some of the magazine's articles. For each activity, we offer recommendations of related publications, contacts, and websites, as well as Project WILD and Project Learning Tree activities that build upon each activity theme. We also indicate the state curriculum standards each activity fulfills.

We'd like to extend special thanks to the sponsors of this project. As a result of their support, over 6,500 students throughout the Northeast receive four issues of *Northern Woodlands* each school year. The sponsors are: Vermont Department of Forests, Parks and Recreation; USDA Forest Service State and Private Forestry; Maine TREE Foundation; Freeman Foundation; Mill River Lumber; Columbia Forest Products; Merchants Bank; a number of individuals, including several members of the Maine Forest Products Council.

We would love to know your thoughts about our teacher's guide. If you have comments or suggestions, or if you need more (or less) copies of the magazine for your students or would like additional copies of this guide, just call or e-mail Ghostwriters Communications at 802-287-4284 (e-mail: tharvey@gwriters.com). Visit our *Northern Woodlands Goes To School* website at www.northernwoodlands.com/goestoschool.html.

Noteworthy News:

Thank you to the many teachers who filled out our annual survey. Your comments will help us fine-tune our teacher's guide. If you didn't have a chance to take part in the survey, but have feedback, please contact us.

Calling for writing and artwork! *Northern Woodlands* would like to set aside feature space in next summer's issue for student essays, poems, and artwork. We need to receive all submissions for that issue by January 31, 2002, so encourage your students to begin working on potential entries now. Please mail submissions (accompanied by student's name, age, class, school, and permission to use) to Sue Kashanski, *Northern Woodlands* Magazine, 1776 Center Rd., PO Box 471, Corinth, VT 05039-0471.

Excellent EPA resources: The EPA offers extensive environmental education materials and provides a handy, online catalog with which to browse them. www.epa.gov/enviroed/oeecat. Their newly released Water Sourcebook Series consists of 4 PDF volumes appropriate for Grades K - 2, 3 - 5, 6 - 8, & 9 - 12. Students explore how the water management cycle affects every aspect of the environment, with the help of hands-on activities and investigations, fact sheets, reference materials, and a glossary of terms. www.epa.gov/safewater/kids/exper.html.

Superb education website: Check out *National Geographic's* site, http://www.nationalgeographic.com/education/, complete with lesson plans for all grades on topics ranging from preserving biodiversity to understanding weather to perception of place.

The Framework identifies fields of knowledge considered necessary in the public school curricula of Maine, New Hampshire, and Vermont.

Project WILD is a national conservation education program designed to prepare students to make decisions affecting people, wildlife, and their shared home, Earth. Project WILD is administered by your state's fish and wildlife department.

Project Learning Tree (PLT) is a program of the American Forest Foundation and the Council for Environmental Education. PLT provides a series of educational activities focused around forests and forest issues. Contact your state forester's office for more information on PLT activities.

Websites are increasingly critical as a research tool. The Teacher's Guide includes web addresses that we hope will help to increase your students' learning opportunities.

Suggested books and readings are also included in the Teacher's Guide to help teachers and students get the most benefit from each edition of the magazine. These references focus on enhancing the concepts featured in the activities.

Where applicable, the Teacher's Guide offers helpful information or resources to supplement activities.

Suggested Activities

1. Population Growth and Development (Current Events/Field Study)

"The Unkindest Cut" (page 14) and ***"Understanding Sprawl"*** (page 43)

According to these articles, human population growth and subsequent development threaten natural communities. New Hampshire annually loses about 13,000 acres of forestland to development. And in the last 40 years, the state's average private plot size has decreased from 114 acres to 37 acres. What do these statistics mean for plant and animal communities? For the human community?

- Have students look at the patterns of population growth in their community and state. The Census Bureau's website, www.census.gov, will provide population statistics for your county, including age and gender distribution. Use this information in tandem with *National Geographic's* "Population Pyramids and Us" lesson plan (http://www.nationalgeographic.com/education/) to explore population growth.
- Explore the idea of terminal harvests and what they mean for natural communities. Conduct a field study on your school grounds, assessing the biodiversity of a 10'x10' transect of forestland and a same-sized transect of lawn (the primary habitat created by housing development) by making a list of all the flora and fauna species you encounter. You can enlist the help of a botanist or consulting forester to help in your analysis.

Reflections in Bullough's Pond: Economy and Ecosystem in New England, by Diane Muir. University Press of New England, 2000. Addresses population growth and its effects on the environment. See review in this issue of *Northern Woodlands*.

The Union of Concerned Scientists' website, http://www.ucsusa.org/environment/pop.faq.html, offers clear answers to frequently asked questions about population growth

The National Wildlife Federation provides printable PDF version fact sheets on population growth and its effects on the environment. http://www.nwf.org/population/education.html

Adopt-a-Forest (Forest Ecology Module, grades 9-12)
Cast of Thousands (Forest Ecology Module, grades 9-12)
A Look at Lifestyles

Shrinking Habitat
Migration Barriers
Classroom Carrying Capacity
Planning for People and Wildlife

ME Social Studies/Geography A, B; Science and Technology J; Mathematics C

NH Science 6c; Social Studies 13,14

VT 1.3 Reading Comprehension; 1.17 Notation and Representation; 7.13 Organisms, Evolution, and Interdependence

2. Starting a Movement (Current Events)

"The Greening of New Hampshire: SPNHF Has Led Conservation Efforts For 100 Years"

by Paula Tracy (page 22)

In the article, forester and SPNHF president, Jane Difley, says, "Informed citizens, acting together, can change the course of history." SPNHF pushed for legislation that transformed NH's forestlands (The Weeks Act, elimination of the timber tax, the current use tax law).

- Have students explore how groups of concerned citizens have changed the course of history, in large ways and small, in their region. Ask them to identify the non-profit and volunteer organizations in your community, and then work in teams to document, in a written report and brief oral presentation to the class, the efforts of these organizations. What are they trying to achieve and how? Have they been successful?
- Your students are those concerned citizens Difley describes. What's going on locally that concerns them? What can they do about it? How can they "start a movement"? Have students take the time to generate a list of local concerns. Then have them brainstorm, individually or as a group, possible ways of addressing those concerns. Their actions could be as simple as volunteering at a local food shelf or as big

WILDLIFE CONNECTION

"Stream Steward Restoration Guide: A Small Woodland Owner's Guide to Stream Habitat Restoration" (review, page 15)

This guide, produced by the American Tree Farm System, together with Trout Unlimited, offers in-depth information on evaluating and restoring stream habitat.

- Contact your state's fisheries department (or any of the groups listed below) to see if you and your students can take part in an on-going stream restoration project or if they can help you create and implement a restoration project for a stream in your area. Printed copies of the guide are limited, but are available by calling the American Tree Farm System at 1-888-889-4466. You can also read and download the guide at www.treefarmsystem.org/conservation.

Website: RiverNetwork provides other good stream restoration resources. (www.rivernetwork.org)

Information: The US Fish and Wildlife Service Partners for Fish and Wildlife is funding plantings and fencing throughout the northern forest.

Information: Lake Champlain Basin Program in VT and NY, www.anr.state.vt.us/champ/welcome.htm; Connecticut River Joint Commissions of NH and VT, www.crjc.org; Maine Stream Team Program, c/o Maine Department of Environmental Protection 888-769-1036, www.MaineDEP.com, e-mail mstp@state.me.us

Improving Wildlife Habitat in the Community

ME Science and Technology B

NH Science 3b

VT 4.1 Service; 7.2 Investigation

Suggested Activities

as promoting changes in local legislation. Encourage them to risk creative and unconventional ideas, to dream big.

Take Action! (Focus on Forests Module, grades 9-12) Improve Your Place

Can Do! Know Your Legislation: What's in It for Wildlife?

ME Social Studies A; English Language Arts E, H

NH Social Studies 12; English Language Arts 2,3

VT 1.8 Reports; 1.13 Speaking; 1.20 Communication of Data; 2.14 Planning/ Organization; 4.1 Service; 4.6 Understanding of Place; 6.9 Meaning of Citizenship

3. Exploring Introduced Species (Communication Skills)

"American Elm"

by Virginia Barlow (page 35)

The American elm met its demise as a result of a species of fungus-carrying beetle introduced from Europe. Introduced species have disrupted and, in many cases, devastated ecosystems around the world.

- "Introduced Species and Their Effect on Biodiversity" is the featured issue in the 2002 Envirothon. Encourage your students to take part in your state's next Envirothon, held in the spring. In the process of preparing for the competition, they'll learn a tremendous amount about aquatics, forestry, soils, wildlife (the four standard topics for the competition), and introduced species. Winners from each state's Envirothon will compete at the National Envirothon to be held next summer at Hampshire College in Amherst, Massachusetts. Check the national Envirothon website, www.envirothon.org, for details.
- The American elm is far more than just a beautiful tree. What happens to a natural community when it loses a member? Have teams of students research and give a presentation on a species introduced into the northeastern United States. What plant or animal species were affected, positively or negatively, by its introduction, and how? How has the regional ecology changed?

For an extensive report on the ecological impacts of introduced species in the United States, gcrio.ciesin.org/CONSEQUENCES/vol2no2/article2.html.

Home Sweet Home (Forest Ecology Module, grades 9-12)

Who Lives Here?

ME Science and Technology B, L; English Language Arts E

NH Science 1, 3a; English Language Arts 3

VT 1.13 Speaking, 2.8 Taking Risks; 2.9 Persevering; 3.10 Teamwork; 7.13 Organisms, Evolution, and Interdependence

4. Getting the Dirt on Soil (Field Study)

"A Handful of Dirt" (page 16)

- Invite a soil ecologist to help students conduct a soil study on the school grounds. Obtain a soils map of your school ground (available through your District Conservationist at the nearest field office of the USDA Natural Resources Conservation Service or your local Natural Resources Conservation District Office) and see how your survey compares to the map's data. Have the ecologist explore with students how soil composition affects the plants, and thereby the animals (including humans), in a given locale.
- Soil is chock-full of fascinating creatures. Have students work in pairs and adopt a soil-dwelling organism to study.
- Start a composting program at your school. Your students can reduce your school's solid waste, create rich soil, and get hands-on learning about nutrient cycling.

www.gsfc.nasa.gov/globe/index.htm. NASA offers step-by-step instructions for carrying out a soil survey.

State Envirothon Contacts:

New Hampshire

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Suggested Activities

www.statlab.iastate.edu/soils/nssc/educ/edpage.html. The USDA's National Soil Survey Center maintains a website full of teaching materials and links for studying soils, including lesson plans, test kits, posters, and a virtual tour of life underground. USDA's Natural Resources Conservation Service offers a useful soil education website, www.nrcs.usda.gov. They also make a wonderful soil biology calendar, with great photos and information each month. They're free, with a $3.00 s&h charge. To order one, e-mail books@agronomy.org.

www.ciwmb.ca.gov/schools/links/Compost.htm. Includes links to many composting education websites, like Composting in the Schools, provided by the Environmental Defense Fund.

The Soil and Water Conservation Society publishes 48-page, color booklet called Soil Biology Primer ($6.00). Call 800-THE SOIL or order via the internet at www.swcs.org.

Cast of Thousands—Soil Studies section (Forest Ecology Module, grades 9-12)
Composting (Municipal Solid Waste Module, grades 9-12)
Soil Stories
Nature's Recyclers

Eco-Enrichers

ME Science and Technology B; English Language Arts H; Social Studies/Geography A

NH Science 3C; English Language Arts 2

VT 1.8 Reports; 2.13 Product/ Service; 3.9 Sustainability; 7.16 Natural Resources

5. Understanding Population Ecology (Current Events)

"New Hampshire, Vermont, and Maine Adjust Deer Hunting Seasons" (page 16)

"Microscope—meadow vole" (page 53)

Both articles relate to population ecology, offering leads into discussion of wildlife management issues.

- Invite a biologist from your state's natural resources department, US Forest Service, or US Fish and Wildlife Service to discuss managing wildlife populations. Why manage wildlife? How do resource managers determine their management practices? How do they estimate how many animals there are? Why is it an inexact science and what are the ethical issues surrounding it? You can help prepare your students for the biologist's visit by working through the Project WILD population ecology activities listed below.

History of Wildlife Management
Turkey Trouble
Oh Deer!
Birds of Prey

ME Science and Technology B

NH Science 3b

VT 7.13 Organisms, Evolution, and Interdependence

CALENDAR CONNECTION

Start the school year off by making daily field journal entries a part of your classroom routine. Create a classroom field journal with a three-ring binder. Each day have students record basic environmental data (temperature, barometric pressure, cloud cover) as well as field notes for that day—some new natural history sighting or observation that they have not recorded before. Encourage students to notice and record cyclical changes and unfoldings. Encourage them to read the *Northern Woodlands* calendar field notes (page) and keep their eye out for those natural events in your area. Have them send their most interesting sightings to *Northern Woodlands* for next year's calendar. By using a binder for your journal, students can add artwork from home-based or out-of-class observations.

Book reference: *Keeping a Nature Journal: Discover a Whole New Way of Seeing the World Around You*, by Clare Walker Leslie and Charles E. Roth. Storey Books, 2000. ISBN: 1580173063.

Poet-Tree

Words…A Journal-Making Activity
Drawing on Nature
Animal Poetry

ME Science and Technology J; English Language Arts H

NH Science 2a; English Language Arts 2

VT 1.12 Personal Essays; 7.1 Scientific Method

Northern Woodlands

Writing Exercise

Notes from the Puckerbrush by Stephen Long (page 29)

"Our camp was a three-wood away from the Inlet Golf and Country Club." This line from "**Notes from the Puckerbrush"** illustrates the power and vitality of precise sensory imagery. Rather than saying the camp was "quite close" or "a two-minute walk" or "two hundred yards away," Stephen Long uses a description that draws us straight into the narrator's adolescent world, in which he lives and breathes golf.

Choose a favorite natural object or place (tree, spot along a river) and describe it using only vivid sensory images, not abstract description (avoid such words as "pretty," "tall," "peaceful"—let your images evoke those ideas). As Mark Twain said, "Don't tell us that the lady screamed—Bring her on and let her scream!"

Northern Woodlands

Word Search

"White on White"

by Susan Morse (page 19)and Calendar (page 4)

1. Name of the family of animal species that includes weasels, minks, martens, fishers, and otters.
2. The only woody plant flowering in October in the Northeast.
3. Species of bird that gets intoxicated from fermented black cherries.
4. Meteor shower in mid-October.
5. Meat-eater.
6. Another name for short-tailed weasel.
7. Monarch butterflies spend the winter here.
8. The last warbler species to migrate south.
9. Favorite food of weasels.
10. The only member of a bumblebee colony that stays alive over the winter.
11. Percentage of its own body weight a weasel must eat each day.
12. Species of bird that eats the seeds of white ash and boxelder during the winter.

E R O D E R S T P S E E O N R A C O L F
L R Q N W G F O I T O R T V L E U Q C O
E O M U E I O B C N O U M I U D E R D R
C R O S T E P E A E R F O R W M O E M L
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F X Q I R O N G A T B M R E D O R U Q E
E R M L U T S O R C O C L L E Y F T I S

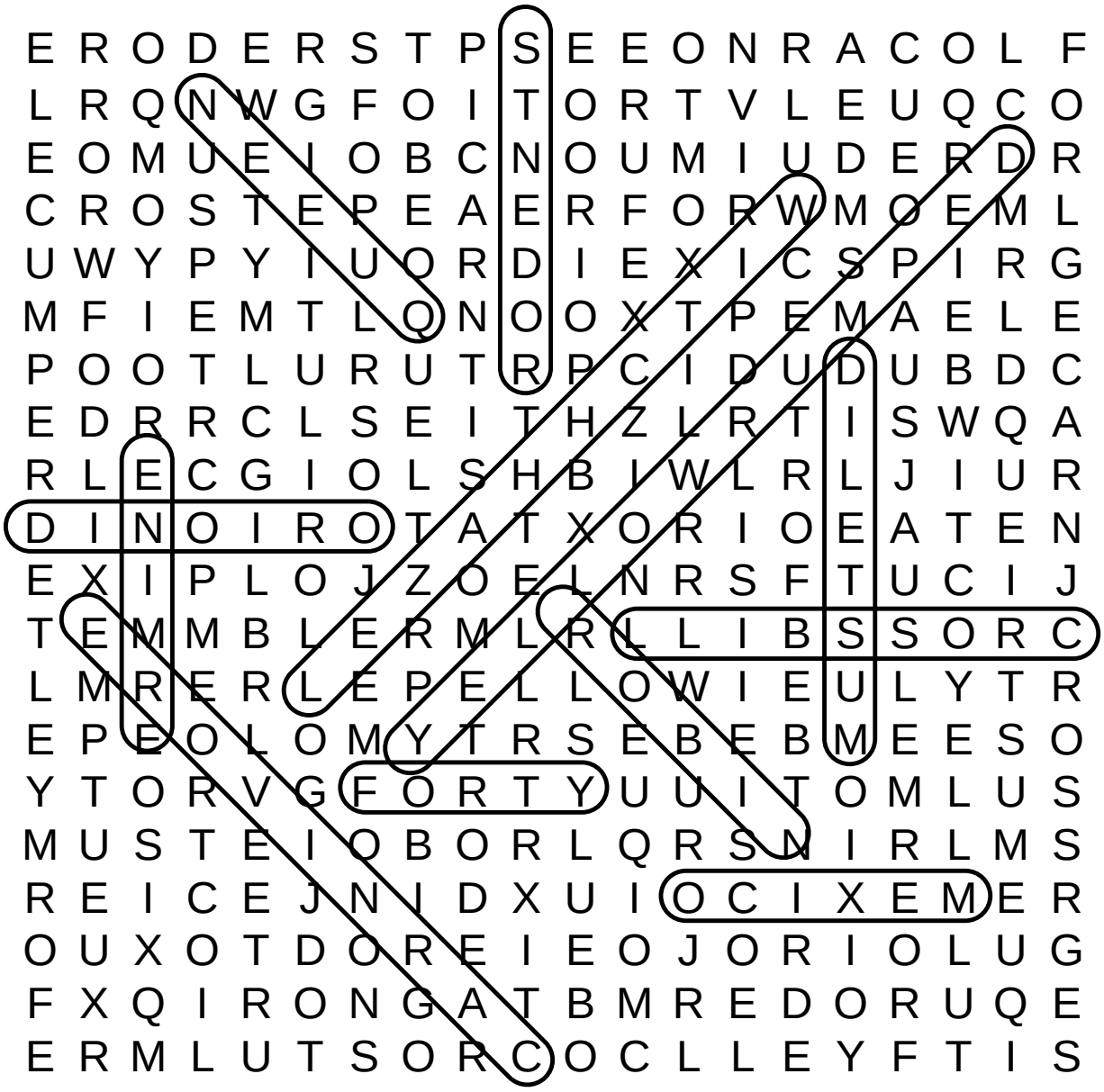
Northern Woodlands

Word Search

"White on White"

by Susan Morse (page 19)and Calendar (page 4)

1. Name of the family of animal species that includes weasels, minks, martens, fishers, and otters. MUSTELID
2. The only woody plant flowering in October in the Northeast. WITCH HAZEL
3. Species of bird that gets intoxicated from fermented black cherries. ROBIN
4. Meteor shower in mid-October. ORIONID
5. Meat-eater. CARNIVORE
6. Another name for short-tailed weasel. ERMINE
7. Monarch butterflies spend the winter here. MEXICO
8. The last warbler species to migrate south. YELLOW-RUMPED
9. Favorite food of weasels. RODENTS
10. The only member of a bumblebee colony that stays alive over the winter. QUEEN
11. Percentage of its own body weight a weasel must eat each day. FORTY
12. Species of bird that eats the seeds of white ash and box elder during the winter. CROSSBILL



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1. Adding Value

“Vermont Bowl Mill Mixes Old and New”

by Chris Granstrom (page 30)

Imagine yourself as a marketing consultant to your community. Your town has significant timber resources, but wants to maintain the forest’s ecological integrity. They’d like to cut a minimum number of trees and maximize the return on each tree cut. It’s your job to recommend creative, workable, value-adding industries for your community. Try, like the Granville Manufacturing Company does, to waste as little as possible, developing markets for under-sized logs, bark, sawdust, and scraps.

Come up with three different value-adding industry proposals.

Northern Woodlands

“Vermont Bowl Mill Mixes Old and New”

by Chris Granstrom (page 30)

[Teacher’s note: The Granville Manufacturing Company is a value-adding industry—that is, it takes a log from the forest and manipulates it in a way that adds value to it, providing local jobs. The least amount of value-adding occurs when trees are cut from the forest and then shipped, as whole logs, out of the community (or state or country) to be processed elsewhere, returning the least amount of money and timber resources to the local community.]

Visit a local value-adding forest products industry with your students. How does the industry contribute to the local economy? What is the value of the logs that enter their facility? What is the comparative value of the products that leave? Why are such industries important to sustainable local economies?

For a list of wood manufacturers in your state, visit:
Empire State Forest Products Association www.esfpa.org
Maine Wood Products Association www.mainewood.org
New Hampshire Timberland Owners Association www.nhtoa.org
Vermont Wood Manufacturers Association www.vermontwood.com

Cindy Fuller, one of the owners of the Granville Manufacturing Company, is a great role model for young women considering professions in wood-products fields. You can e-mail her at bowlmill@madriver.com or call 800-828-1005.

“Challenging Careers In Wood Manufacturing,” an engaging, 8-minute video produced by the Vermont Wood Manufacturers Association, encourages high school students to explore a career in wood manufacturing. To order this free video, contact Tina in the VWMA office at 802-287-4284 or visit the website www.woodcareers.org.