

Winter 2000

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## NORTHERN WOODLANDS MAGAZINE

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### 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.

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 Winter 2000 issue of *Northern Woodlands*. Articles in this issue cover a wide range of forest-related topics—from flyfishing to fox tracks, from the effects of El Niño on songbirds to the reason spruce trees are conical. We hope you and your students enjoy this edition and find it a useful complement to your studies.

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.

A special thanks goes 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; University of Vermont Extension—Renewable Resources Extension Act grant fund; Maine TREE Foundation; Columbia Forest Products; Mill River Lumber; Vermont Wood Manufacturers Association; Cersosimo Lumber; and the Rondo Club.

## NEW IN THIS ISSUE

You'll find that we've featured one article, "What do Animals Need?", and provided five activities related to it. This article is chock full of hands-on information, and these activities will help you apply the ideas to your own school grounds. Also, we're now indicating the subject area covered by each activity, which we hope will help in planning your curriculum. We welcome all feedback. If you have suggestions or comments, 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](mailto:tharvey@gwriters.com)).



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

## Evaluating the Habitat of Your School Grounds (Field Studies)

### “What do Animals Need?”

by Stephen Long (page 21)

### “Sorting the Saplings”


by Ana Ruesink (page 40) and


### “Tracking Tips”


by Susan C. Morse (page 17)

#### 1. MAPPING:

- Obtain topographic and soil maps of school grounds and surrounding lands (10 times schoolyard acreage, as cited in Stephen Long’s article).
- Evaluate and document variations in land forms (elevation changes, wetlands, clearings, woodlands, etc.).
- Using these maps, draw a large, scaled map of the school grounds to use in your habitat evaluations, indicating buildings and predominant land forms.

 Mapping information:  
[www.communitymap.org](http://www.communitymap.org)

 VT Standards: 1.3 Read and Analyze; 1.17 Notation and Representation; 7.2 Investigation

 NH Standards: Social Studies 2a, 2c; Language Arts 5

 ME Standards: Visual and Performing Arts, A; Social Studies/Geography, A

#### 2. EVALUATING HABITAT

- Invite a county forester to your school to lead a habitat analysis. This is a perfect opportunity to put the ideas from “Sorting the Saplings” into play, as students identify trees in winter. Bring along the checklist of landscape features provided in Long’s article to help with your inventory. Overlay your findings on your school grounds map.
- Invite an Audubon Society member to lead a bird survey of the property. Remember that this is a winter count and represents a small portion of resident birds.
- Invite a biologist/tracker to lead an animal survey of the property. Assuming a light covering of snow, winter is an excellent time to discover animal activity through tracks (refer to “Tracking Tips”).
- Create on-going flora and fauna lists for the school property.



*A Guide to Nature in Winter*,  
by Donald Stokes.  
Little, Brown and Co., 1976.  
ISBN: 0-316-81723-6



Local Audubon chapter  
contacts: [www.audubon.org](http://www.audubon.org)

VT county foresters:  
[www.state.vt.us/anr/fpr/forestry/steward/county/](http://www.state.vt.us/anr/fpr/forestry/steward/county/)



Maine county foresters:  
Charles Gadzik, ME Forest  
Service. Phone: 207-287-2793  
e-mail: [chuckgadzik@state.me.us](mailto:chuckgadzik@state.me.us)

New Hampshire county foresters:  
Philip Bryce, Division of Forests  
and Lands. Phone: 603-271-2214.

Keeping Track, Inc.  
Richmond, VT 802-434-7000



Habitrekking (7th-12th grade)  
Urban Nature Search (5th-9th)  
Succession Transect (10th-12th)  
Bird Song Survey (9th-12th)



Adopt-a-Forest (Forest Ecology  
module) (9th-12th grade)  
Cast of Thousands (Forest Ecology  
module) (9th-12th grade)



VT Standards: 7.13 Organisms,  
evolution, and independence;  
7.1 Scientific method



NH Standards:  
Science 2a, 2b, 3a





ME Standards: Science and  
Technology, A; Geography,  
1; Math, 2


## CALENDAR

## CONNECTION

Create a calendar to record natural events on a daily basis. Each day, have one student observe and record temperature, weather conditions, cloud type, and one natural event observed that day (for example, geese flying overhead, buds swelling on the schoolyard sugar maple, first snow of the season). Make the calendar mural-sized, allowing students to incorporate drawings, photographs, and magazine prints, in addition to their notations.

 VT Standards: 5.3 Visual Arts, 7.1 Scientific Method

 NH Standards: Science, Technology, and Society 2a


 ME Standards: Visual and Performing Arts, A




# Suggested Activities


## 3. BRAINSTORMING DIVERSITY

- Assess the biological diversity (vertical and horizontal) of the school property, using the criteria given in Long’s article.
- Brainstorm ways to increase diversity on the property (create a butterfly garden, increase bird habitat through bird-friendly plantings, etc.).
- Invite a landscape architect to help design these habitat changes.


 *The Audubon Society Guide to Attracting Birds*, by Stephen W. Kress. Charles Scribner’s Sons, 1985.

 National Association of Conservation Districts (NACD) offers booklets and packets for backyard conservation: [www.nacdnet.org](http://www.nacdnet.org) (or call 1-888-LANDCARE)

 Improving Wildlife Habitat in the Community


 VT Standards: 2.10 Abstract Thinking; 2.13 Product/Service; 2.6 Approach to Reasoning


 NH Standards: Science 1a, 3b

 ME Standards: Science and Technology, K


## 4. CREATING A MANAGEMENT PLAN


- Get a copy of a management plan for forested land near the school from a consulting forester near you (many advertise in *Northern Woodlands*) or consult your county forester.
- Have students look it over to see how a forester puts such a plan together.
- Invite a forester to help create a management plan for the school property, incorporating students’ ideas to enhance diversity.
- Present the plan to the school board.


 *Working with Your Woodland*, by M. Beattie, C. Thompson, and L. Levine. University of New England Press, 1983. ISBN: 0-87451-266-2 (See chapter 4, “Management Plans”)

 Concise guide for creating management plan: [www.agnr.umd.edu/ces/pubs/html/fs625/fs625.html](http://www.agnr.umd.edu/ces/pubs/html/fs625/fs625.html)

 400-Acre Wood, #50

 VT Standards: 2.3 Problem Solving; 2.10 Abstract Thinking

 NH Standards: Geography 15

 ME Standards: Science and Technology, J

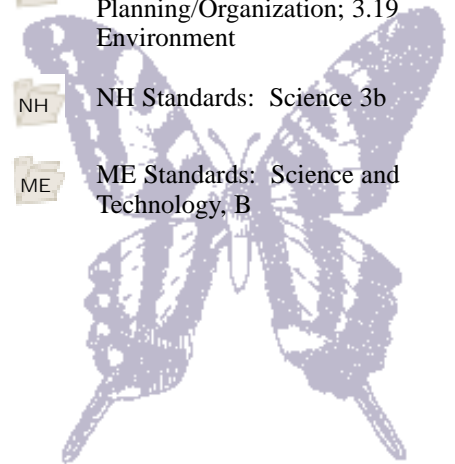
## 5. IMPLEMENTING HABITAT IMPROVEMENTS

- Build that butterfly garden, bird thicket, etc. Check to see if your transfer station has a composting program to get excellent soil for your project (and teach about nutrient cycling!).
- Team up with your local extension agency’s Master Gardening program, with its fleet of trained gardening volunteers.

 VT Standards: 2.14 Planning/Organization; 3.19 Environment

 NH Standards: Science 3b

 ME Standards: Science and Technology, B



## CAREER CONNECTION


### “UNDER THE MICROSCOPE”

By Virginia Barlow, (page 61)

Research studies such as that described in Barlow’s article often require years of painstaking work. Invite a research biologist to visit the classroom and discuss the true work of biological research—the rigors and rewards that lie behind the published research results.

 Consult your state university for research contacts. Graduate students are potential, free candidates. University of Vermont: [www.uvm.edu](http://www.uvm.edu) University of New Hampshire: [www.unh.edu](http://www.unh.edu) University of Maine: [www.umaine.edu](http://www.umaine.edu)

 Wildlife Research

 VT Standards: 3.15aa, Careers

 NH Standards: Science 1a, 2e


 ME Standards: Career Preparation, A


## WILDLIFE


## CONNECTION


“LEGENDS, LORE, AND OUTRIGHT LIES: WARNER SHEDD DEBUNKS WILDLIFE MYTHS” by Chris Granstrom (page 46)

Have students work alone or in pairs to choose an animal and research the legends and lore associated with that animal. Encourage students to look beyond our culture, to the mythology of Native Americans, aboriginals, ancient Greeks and Romans, and so on. Have students present their discoveries, inviting them to use a variety of media—including drama and art (painting, paper maché, sculpture, fiber)—to illuminate their ideas.

 People of the Forest, #17

 VT Standards: 5.3, Visual Arts

 NH Standards: Language Arts 5


 ME Standards: Visual and Performing Arts, A,B; Social Studies, A


# Suggested Activities

## Effects of Acid Rain (Current Events)


### “Frozen to the Bone” (page 38)

- Create a mural tracing acid rain from its source to your school grounds. Refer to EPA web link for information about acid rain causes, effects, and sources.
- Invite a state department of natural resources consultant to discuss local extent of acid rain effects.
- Conduct soil and rainfall (snowfall) pH study on school grounds.


 General acid rain information: [www.epa.gov/docs/acidrain](http://www.epa.gov/docs/acidrain)  
Outline of pollutants released into your community: [www.scorecard.org](http://www.scorecard.org)

 Flip the Switch for Wildlife


 pH and Plants (1977 ed.) #41

 VT Standards: 1.3 Read and Analyze; 7.11 Systems Analysis; 7.2 Investigation


 NH Standards: Science 2a, Language Arts 5


 ME Standards: Social Studies/Geography, B


- Have students write an editorial about that idea, using their research information to create stronger, more fully developed arguments. Encourage them to write such that, as Decker suggests, the article will earn the respect of those unfamiliar with or opposed to their ideas.
- Or, have students debate or have a panel discussion on hunting in the 21st century. Focal questions might include: Is there a place for it? What ethical standards should govern it?


 *Beyond Fair Chase: The Ethic and Tradition of Hunting*, by Jim Posewitz. Falcon Press, 1994.

 The Hunters


 Values on the Line, #19 (6th-8th grade)


 VT Standards: 1.3, Read and Analyze; 1.11 Persuasive Writing; 1.15 Speaking


 NH Standards: Language Arts 3, 6


 ME Standards: Social Studies/History, A; English/Language Arts E, G


what various fish eat, where they live in streams and why, and what habitat conditions they need to thrive.

 Habitat Rummy (5th-7th grade)

 Listing of state fish and wildlife divisions and angling associations [www.angler.org](http://www.angler.org)

 VT Standards: 5.3 Visual Arts, 7.13 Organisms, Evolution, and Interdependence

 NH Standards: Science 3b

 ME Standards: Visual and Performing Arts, A

## Writing about Place (Writing Skills)


### “A Place in Mind,”


by Reeve Lindbergh (page 80) and


### “Walking in the Woods,”


by Grace Paley (page 63)

Read “A Place in Mind” and “Walking in the Woods” aloud in class. Invite students to recall a favorite natural place of theirs and recollect the sensory images—smells, sounds, textures, sights, tastes—and experiences associated with that place. Invite them to consider the importance of that particular place to them and why it stands out from all the others. Ask them to write for 20 minutes about that place, in poem or prose. Invite students to share what they have written with the class.


 *Orion* magazine. Excellent resource for essays, poems, and artwork relating to the natural world.

 Wild Words: A Journal-Making Activity

 Words to Live By (Focus on Forests module) (9th-12th grade); Poet Tree, #5 (5th-8th grade)

 VT Standards: 1.12 Personal Essays

 NH Standards: Writing 2

 ME Standards: English/Language Arts, G

## Hunting Ethics (Communication Skills)

### “Fair Chase, Hunter Ethics, and Utilizing Vermont’s Wildlife”

by Thomas Decker (page 18)

Although this article focuses on hunting in Vermont, the ideas are applicable anywhere.

- Have students choose one idea from the article about which they felt a strong emotion.
- Ask them to research and find arguments to support the opposite perspective.

## The Art of Flytying (Arts and Craftsmanship)

### “At Work Tying Flies with Fran Betters”

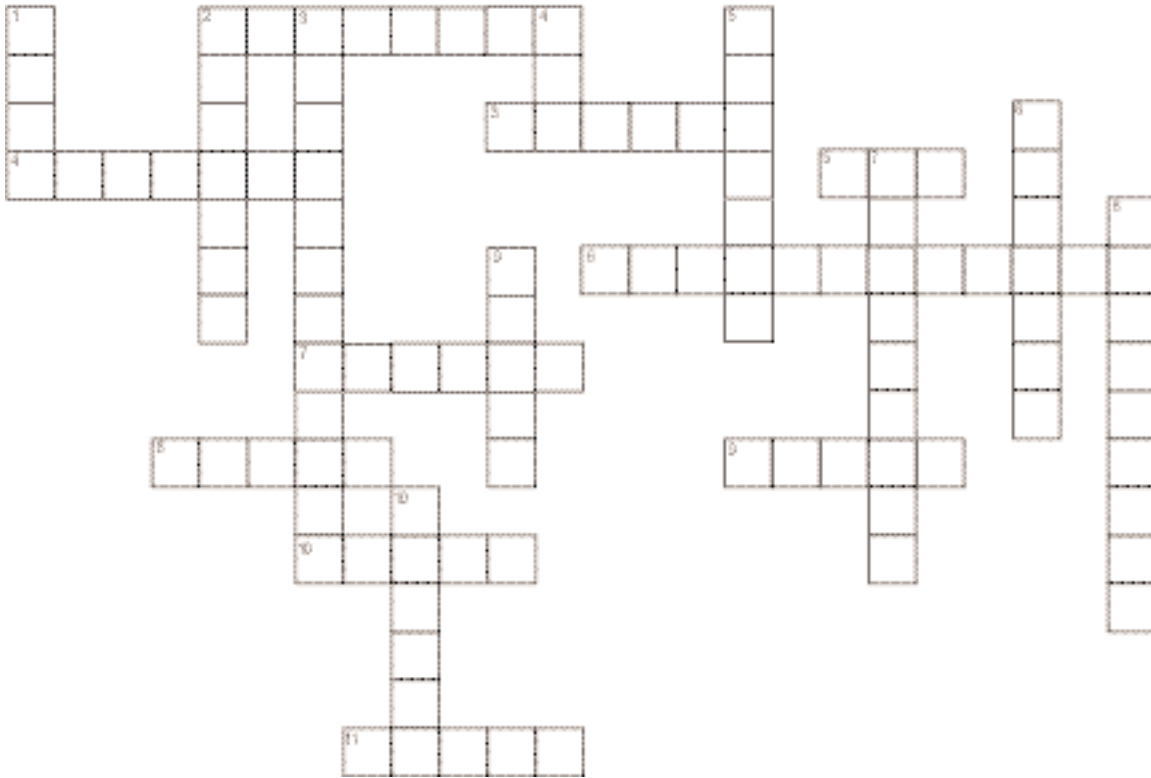
by Kathleen Hentcy (page 36)

Invite an accomplished flytyer (member of local angling association) into the classroom to teach kids how to tie a basic fly. This crafts project has broad ecological connections—discuss the wide variety of flies and how they reflect the ecology of insect life on and in the water. Discuss



## Crossword Puzzle

Refer to **“Tracking Tips”** by Susan C. Morse (page 17) and **“Bumper Crops for Forest Foragers”** by Phil Auger (page 13)



### ACROSS

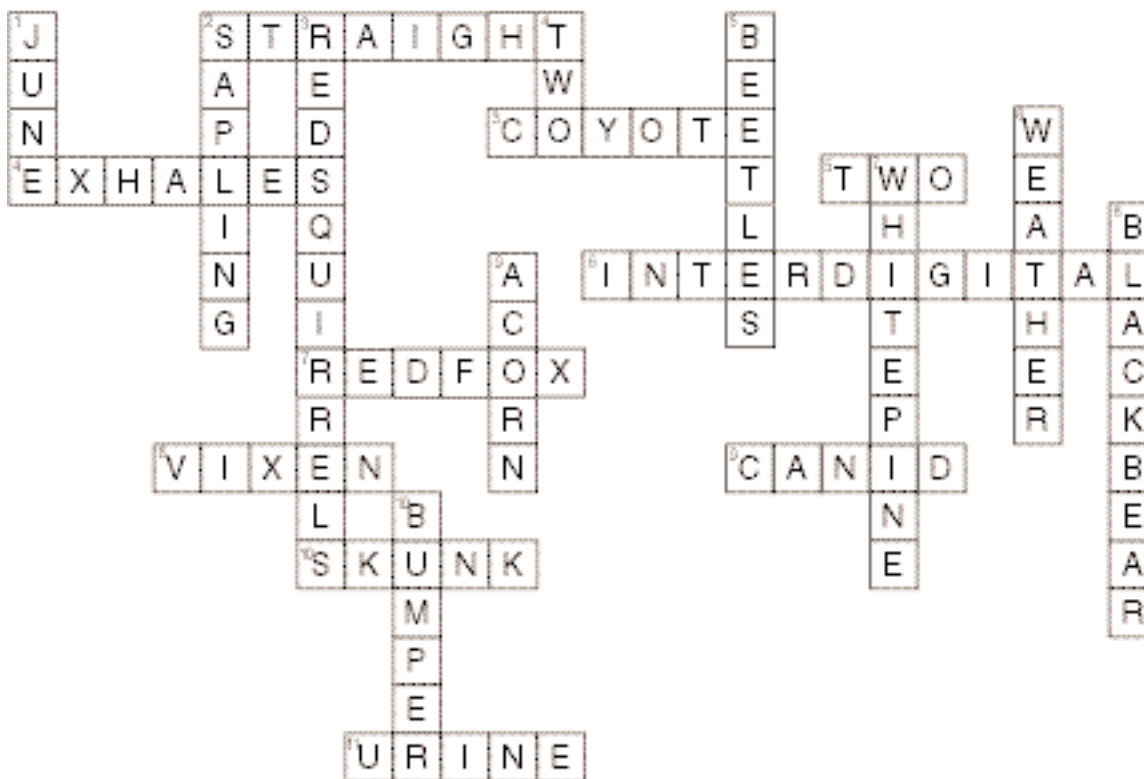
2. fox's tracks generally follow a \_\_\_\_\_ line
3. makes furless toe prints
4. how the author revives an old fox scent mark
5. number of prints in each fox track
6. another name for heel pad
7. "catlike canid" (2 words)
8. female fox
9. member of the dog family
10. "If it smells like a \_\_\_\_\_, it's fox"
11. substance used to leave scent mark

### DOWN

1. critical weather month for developing white pine seeds
2. young tree
3. rodents benefiting from this year's big seed crop (2 words)
4. number of years white pine cones need to fully ripen
5. insects that attack unripened white pine seeds
6. significant factor causing an abundant seed year
7. important seed source for rodents (2 words)
8. bountiful seed crop benefited this hibernating mammal (2 words)
9. staple food for more than 100 wildlife species
10. tremendous seed crop

## Crossword Puzzle

Refer to **"Tracking Tips"** by Susan C. Morse (page 17) and **"Bumper Crops for Forest Foragers"** by Phil Auger (page 13)



## Football Field Diversity

### What do Animals Need?

by Stephen Long (page 21)

In “What do Animals Need?”, Stephen Long explains the concepts of vertical and horizontal diversity, using a football field to illustrate his point. Please read that section of the article carefully and draw the transformed football field described in it. Label each new habitat you create (for example, “hardwood stand, 12-16” diameter trees, 60% canopy cover”). Be as detailed as you can, both in drawing and labeling.



