Northern Woodlands

Winter, 2004

Looking for an article? A complete index of the past five years' worth of *Northern Woodlands* is available at http://www.northernwoodlands.org/nw_index.html; we would be happy to make a photocopy of an article you need and mail it to you.

Project Learning Tree Coordinators

Maine: Pat Maloney 207-626-7990, meplt@gwi.net

New Hampshire: Esther Cowles 603-226-0160, info@nhplt.com

New York: Dick Rommel 845-256-3078, rhommel@gw.dec.state.ny.us

Vermont: Virginia Anderson 802-241-3651, ginger.anderson@anr.state.vt.us

NORTHERN WOODLANDS MAGAZINE

802-439-6292

www.northernwoodlands.org

Editorial Mission

To shape the future of the forests of the Northeast through information and education about their value, use, and conservation.

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

Northern Woodlands Goes to School

Welcome to the Winter 2004 edition of *Northern Woodlands* magazine. Within its covers, you and your students will find articles to inspire a winter's worth of investigation and learning. You'll explore the world of waterfowl decoy carving, ponder the debate surrounding wilderness designation, learn how to track snowshoe hares, and much more.

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 5,000 students throughout the Northeast are able to participate in Northern Woodlands Goes to School this year. The sponsors are: the Alexander Host Foundation, Britton Lumber Company, Cersosimo Lumber Company, Inc., Columbia Forest Products, Fountain Forestry, Inc., Frank and Brinna Sands Foundation, Freeman Foundation, French Foundation, International Paper, Maine TREE Foundation, Mill River Lumber, New England Forestry Foundation, Northeastern Lumber Manufacturers Assoc., Pompanoosuc Mills, Sugar River Savings Bank, Tele Atlas, Twinflower Farm, Wells River Savings Bank, and the Windham Foundation.

We would love to know your thoughts about our teacher's guide. If you have comments or suggestions, or if you need more (or fewer) copies of the magazine for your students or would like additional copies of this guide, just call or email Anne Margolis at (802) 439-6292 (email: anne@northernwoodlands.org). Visit our *Northern Woodlands Goes to School* website at www.northernwoodlands.org/goestoschool.html.

Noteworthy News:

2005 Envirothon. It's not too early to begin planning for this national competition. The Envirothon's mission is to develop knowledgeable, dedicated citizens willing to work towards achieving and maintaining a balance between quality of life and quality of the environment. Team members in grades 9-12 collaborate to develop an understanding of the ecology and management of soils, forests, wildlife, and aquatics. They also practice dealing with complex resource management decisions as they develop an oral presentation focused on a particular current environmental issue.

If your students get involved, they will compete, usually in May, with other teams from your state. The winner of each state's Envirothon competes in the national Envirothon, which will be held July 18-24, 2005, at Southwest Missouri State University. Visit the national Envirothon website, www.envirothon.org, to find contact information for your state's Envirothon coordinator.

Young Naturalist Awards 2005. The Young Naturalist Awards program, sponsored by the American Museum of Natural History, invites students in grades 7-12 to conduct original research in the areas of biology, earth science, or astronomy and document their research in a written essay. The twelve finalists (two per grade) receive scholarships ranging from $500-$2500. Entries are due by January 7, 2005. To download a contest packet, visit www.amnh.org/youngnaturalistawards.

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. Deer Ecology

More Harm than Good (page 17)

The Farm on Huntington Hill, by Stephen Long (page 30)

More Harm than Good delves into a fascinating aspect of human impacts on wildlife populations. When and under what conditions is it biologically acceptable to feed wild animals? Why, your students may wonder, is it OK to feed birds, but not to feed deer? Have students read Stephen Long's article and notice Sam Doyle's practices. Is it ecologically acceptable to plant crops for deer and other wildlife, as Sam Doyle does? How does that practice differ from laying out purchased feed for deer?

Have students investigate deer ecology. As a group, brainstorm avenues of investigation (winter adaptations, population trends in your state, predators [historical and current], your state's deer management practices, habitat requirements, physiology, diseases, reproduction, hunting impacts, and so on), and then have students select one of these to investigate in depth. Have each student create an engaging display, using graphics and text to convey their discoveries, and present their findings in a brief presentation to the class.

White-tailed Deer Ecology and Management, by Lowell K. Halls. Stackpole Books: 1984.

www.montana.edu/wwwpb/reso/toughlov.html. This Montana State University article describes additional negative impacts of winter deer feeding.

Oh Deer! (gr. 5-8)
Deer Crossing (gr. 9–12)
Deer Dilemma (gr. 9-12)

ME
Science and Technology B, J
English Language Arts A, D, E, H

NH
Science 2c, 3a
English Language Arts 1, 2, 5, 6

VT
1.8 Reports
1.17 Notation and Representation
1.19 Research
1.20 Communication of Data
2.14 Planning/ Organization
6.2 Uses of Evidence and Data
6.3 Analyzing Knowledge
7.13 Organisms, Evolution, and Interdependence
7.1 Scientific Method
7.2 Investigation
7.13 Organisms, Evolution, and Interdependence

2. Carving out a Living

Wings from Wood, by Leighton Wass (page 24)

Carving duck decoys is an excellent way to integrate ecology and art, to practice attentiveness to sensory detail, and to encourage dexterity. Invite a local wood carver (preferably one who uses hand tools) to your classroom to teach students how to go about carving duck decoys. Discuss the properties of local woods that make them more or less useful for carving. Try to use only local wood for the project—Wass recommends basswood, white-cedar, or white pine. Have students work in small groups to select a local duck species, carve and paint it, then research its ecology and create a succinct and engaging written display to accompany the decoy. Display the ducks at your local library, bank, or other high-visibility location.

Drawing on Nature (gr. 5-8)

Carving Decorative Duck Decoys: With Full-Size Templates, by Harry V. Shourds and Anthony Hillman. Dover Publications: 1984.

ME
Visual and Performing Arts A
Science and Technology B, J
English Language Arts A, D, E, H

NH
Science 2c, 3a
English Language Arts 1, 2, 5, 6

VT
1.8 Reports
1.17 Notation and Representation
1.19 Research
1.20 Communication of Data
2.14 Planning/ Organization
5.28 Artistic Proficiency
5.29 Visual Arts
6.2 Uses of Evidence and Data
6.3 Analyzing Knowledge
7.13 Organisms, Evolution, and Interdependence

3. Documenting Home (field study)

Tug Hill, Land of Water, photos and text by Elinor Osborn (page 44)

What is the essence of *home*? Encourage students to capture the human and natural essence of their home place thorough a photo essay. Invite a photographer from your local paper to talk with your students about how he or she chooses subject matter and composes a photograph. Have your students use one roll of film

CAREER CONNECTION

Come and See What They Saw at Rebuilt Mill,

by Joseph M. Smith (page 17)

As Smith notes, most local sawmills welcome visitors, and what better way for students to understand the process involved in creating the many forest products they use than by visiting a mill? Consider a trio of visits—first to a working forest, guided by a consulting forester who can explain the process of selecting trees for an ecologically sustainable timber harvest; then to a sawmill, where the wood is cut into dimension lumber; and finally to a woodworking shop, where finished wood products are manufactured.

ME
Science and Technology B, M
Economics A

NH
Science 4c
Social Studies 4, 5, 9

VT
3.9 Sustainability
4.6 Understanding Place
6.15 Knowledge of Economic Systems
6.19 Identity and Interdependence
7.16 Natural Resources

Suggested Activities

(or a digital camera) to photograph their home place, as they choose to define it—whether that be their own property, their neighborhood, or their town. What did they choose to photograph and what did they leave out? If they choose to photograph people, encourage them to interview their subjects. What story do the photographs reveal? Students can then write a one-page introduction to the photographs, perhaps reflecting on how the photos represent home for them, and give each photo a brief caption.

There are many "coffee table" photo essay books to share with your students. *Vermont People*, by Peter Miller (Vermont People Project: 1990), is an excellent example.

For younger students, William Wegman's *My Town* (Hyperion: 1998), about a student who creates a photoessay about his town, will be a humorous inspiration.

ME Visual and Performing Arts A
English Language Arts G

NH Social Studies 11
English Language Arts 3

VT 1.13 Clarification and Restatement
1.16 Artistic Dimensions
2.14 Planning/Organization
4.6 Understanding Place
5.28 Artistic Proficiency
5.29 Visual Arts

4. In Praise of Crows

The Uncommon Crow, by Warner Shedd (page 54)

Warner Shedd's essay appreciates the often-maligned crow by exploring its fascinating behavior, ecology, and history, and by revealing the many misconceptions we have about crows. We tend to take for granted, and even malign, many animal species, particularly those whose presence bothers us in some way. Have each student select a maligned animal species—for example, skunk, cockroach, turkey buzzard, slug, mosquito, raccoon, coyote, rat, mouse, or cowbird (see *Cowbirds* article, page 42)—and write an essay that sheds new and appreciative light on that animal by exploring the animal's adaptations, behavior, physiology, and history. Have students create an artistic rendering of their animal in a medium of their choice.

Owls Aren't Wise and Bats Aren't Blind, by Warner Shedd. Three Rivers Press: 2001.

ME Science and Technology B, J
English Language Arts A, D, E, G, H
Visual and Performing Arts A

NH Science 2c, 3a
English Language Arts 1, 2, 3a, 5, 6

VT 1.8 Reports
1.11 Persuasive Writing
1.17 Notation and Representation
1.19 Research
1.20 Communication of Data
2.14 Planning/ Organization
5.28 Artistic Proficiency
5.29 Visual Arts
6.2 Uses of Evidence and Data
6.3 Analyzing Knowledge
7.13 Organisms, Evolution, and Interdependence

5. Understanding Macroinvertebrates (field study)

Buggy Water is Cleaner, by Anne Margolis (page 43)

Aquatic macroinvertebrates are excellent field study subjects, as they are relatively abundant and easy to catch. Plan to assess the macroinvertebrate community in a local stream or river. Use the Lewis Center for Education Research study protocols (website below) to help guide your study. Have students develop hypotheses they wish to test through the field study, then develop and carry out a research plan. After the field study, have students write up their findings using the standard format of a scientific research paper. The GLOBE Program offers a good template, available on their website, listed below.

It's worth the hassle of typing in this long web address to access this excellent resource, created by the Lewis Center for Education Research, which lists links to stream study protocols, data sheets, sources for research tools, field guides, and more. www.lewiscenter.org/force/1070/subprojects/Instructor/IPBIO%20Main%20Page/aquastud.htm.

CALENDAR CONNECTION

Winter Calendar (page 4)

The *Northern Woodlands* Winter Calendar notes the Christmas Bird Count (CBC) in the third week in December. The CBC, coordinated by the Audubon Society and now in its 105th year, compiles bird count data from across the Western Hemisphere. Get your students involved in this collaborative, long-term research project by conducting or joining a local CBC. The Audubon CBC website contains all the information you'll need to take part, and allows students to read what scientists have learned about bird populations from the CBC's data. This year the CBC runs from December 14, 2004 - January 5, 2005.

For information about the Audubon Christmas Bird Count, www.audubon.org/bird/cbc/index.html.

The main Audubon site also provides a state-by-state listing of regional Audubon offices, (www.audubon.org/states/. Use this to locate an ongoing CBC near you.

ME Science and Technology B, J, M

NH Science 1a, 2a, 3b, 6a

VT 4.6 Understanding Place
6.2 Uses of Information and Data
7.1 Scientific Method
7.2 Investigation
7.13 Organisms, Evolution, and Interdependence

Suggested Activities

The GLOBAL Program is a worldwide hands-on, primary and secondary school-based education and science program. Their website is chock-full of great resources, including a wonderful 30-page manual on studying aquatic invertebrates. www.global.gov.

Washington Virtual Classroom maintains a good website on conducting macroinvertebrate field studies and contains curricula for both middle school and high school teachers. www.wavcc.org/wvc/cadre/WaterQuality/macroNEW.htm.

The New York State Department of Environmental Conservation maintains an online key to aquatic invertebrates, www.dec.state.ny.us/website/dow/stream/, which you can print and carry with you while doing stream studies.

ME Science and Technology B, J
English Language Arts A, D, H

NH Science 1a, 2a, 2b, 3a, 6d
English Language Arts 1, 5

VT 1.19 Research
4.6 Understanding Place
6.2 Uses of Evidence and Data
6.3 Analyzing Knowledge
7.1 Scientific Method
7.2 Investigation
7.13 Organisms, Evolution, and Interdependence

6. Debating Wilderness

No! To Congressionally Designated Wilderness, by Putnam Blodgett (page 9)

Putnam Blodgett offers one perspective on Wilderness designation. As with any complex natural resources issue, there are many other ways of assessing the ecological, economic, and cultural pros and cons of additional designation. Have students research the spectrum of perspectives and then carefully assess the arguments made for and against additional Wilderness designation. Have students read the Harvard Forest text Blodgett cites (available online, see website below). Although he quotes the article to support his view, students will find as many or more quotes within that article to suit a pro-Wilderness view (such as "Habitats supporting uncommon species and large intact forest blocks need to be protected to maintain ageing ecosystems, promote old-growth and other uncommon communities, and support natural ecological patterns and processes."). This article provides an excellent example of how facts used in debate can both inform and mislead.

Have students write a persuasive essay, drawing on their research, that states their informed opinion on the Wilderness debate. Conduct an oral debate on the issue.

Cabin Conflict (gr. 9-12)
Philosophical Differences (gr. 9-12)

Squirrels vs. Scopes (*Focus on Forests* high school module)

Old Growth Forests (Focus on Forests high school module)

Wilderness and the American Mind, by Roderick Nash. Yale University Press: 1967. A classic study of America's changing attitudes toward wilderness.

The Great New Wilderness Debate, edited by J. Baird Callicott and Michael P. Nelson. University of Georgia Press, 1998. This collection of essays (particularly Part Three, "The Wilderness Idea Roundly Criticized and Defended") offers a wide range of perspectives on wilderness by scholars in environmental history and environmental philosophy.

The Illusion of Preservation – A Global Environmental Argument for the Local Production of Natural Resources by Berlik, Kittredge, and Foster. http://harvardforest.fas.harvard.edu/publications/pdfs/Berlik_JBiogeography_2002.pdf.

ME English Language Arts A, D, E, G, H

NH English Language Arts 1, 2, 3, 5, 6

VT 1.11 Persuasive Writing
1.15 Speaking
1.19 Research
1.21 Selection
6.2 Uses of Evidence and Data
6.3 Analyzing Knowledge
6.14 Forces of Unity and Disunity
6.18 Nature of Conflict

WILDLIFE CONNECTION

Snowshoe Hare, by Susan C. Morse (page 23)

Winter is a great season for tracking. Look for wildlife signs around the school grounds and beyond, watching not only for tracks but for the many other clues that animals leave behind. Keep a class journal of tracking discoveries, and consider mapping your findings, either by hand or digitally, using GPS equipment.

Tracks!

Tracking and the Art of Seeing, by Paul Rezendes. Harper Collins: 1999.

Guide to Animal Tracking and Behavior, by Donald and Lillian Stokes. Little, Brown, and Co: 1986.

Mammal Tracks: Life-Size Tracking Guide, by Lynn Levine and Martha Mitchell. Heartwood Press: 2001.

ME Science and Technology J
Physical Education A

NH Science 1a, 2a, 2b, 3a

VT 3.5 Physically Active lifestyle choices
7.1 Scientific Method
7.2 Investigation

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Word Search

Winter Calendar (page 4)

This bird species feeds on the fly larvae inside goldenrod ball galls.

This mammal is named for its long, furry hind feet (two words).

The seeds of this wetland plant are dispersed by the wind.

Evergreen groundcover.

The bare ears and tail of this mammal are prone to frostbite in winter.

Eats birch polypore fungus in winter (three words).

On warm winter days, you'll see these tiny, jumping insects sprinkled over the snow in the forest (two words).

This mammal sometimes makes its winter nest in a birdhouse (two words).

The males of this bird species overwinter farther north than the females (three words).

Woodpeckers eat this fatty birdfeeder offering.

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

Northern Woodlands

Word Search

Winter Calendar (page 4)

This bird species feeds on the fly larvae inside goldenrod ball galls. CHICKADEE

This mammal is named for its long, furry hind feet (two words). SNOWSHOE HARE

The seeds of this wetland plant are dispersed by the wind. CATTAIL

Evergreen groundcover. GOLDTHREAD

The bare ears and tail of this mammal are prone to frostbite in winter. OPOSSUM

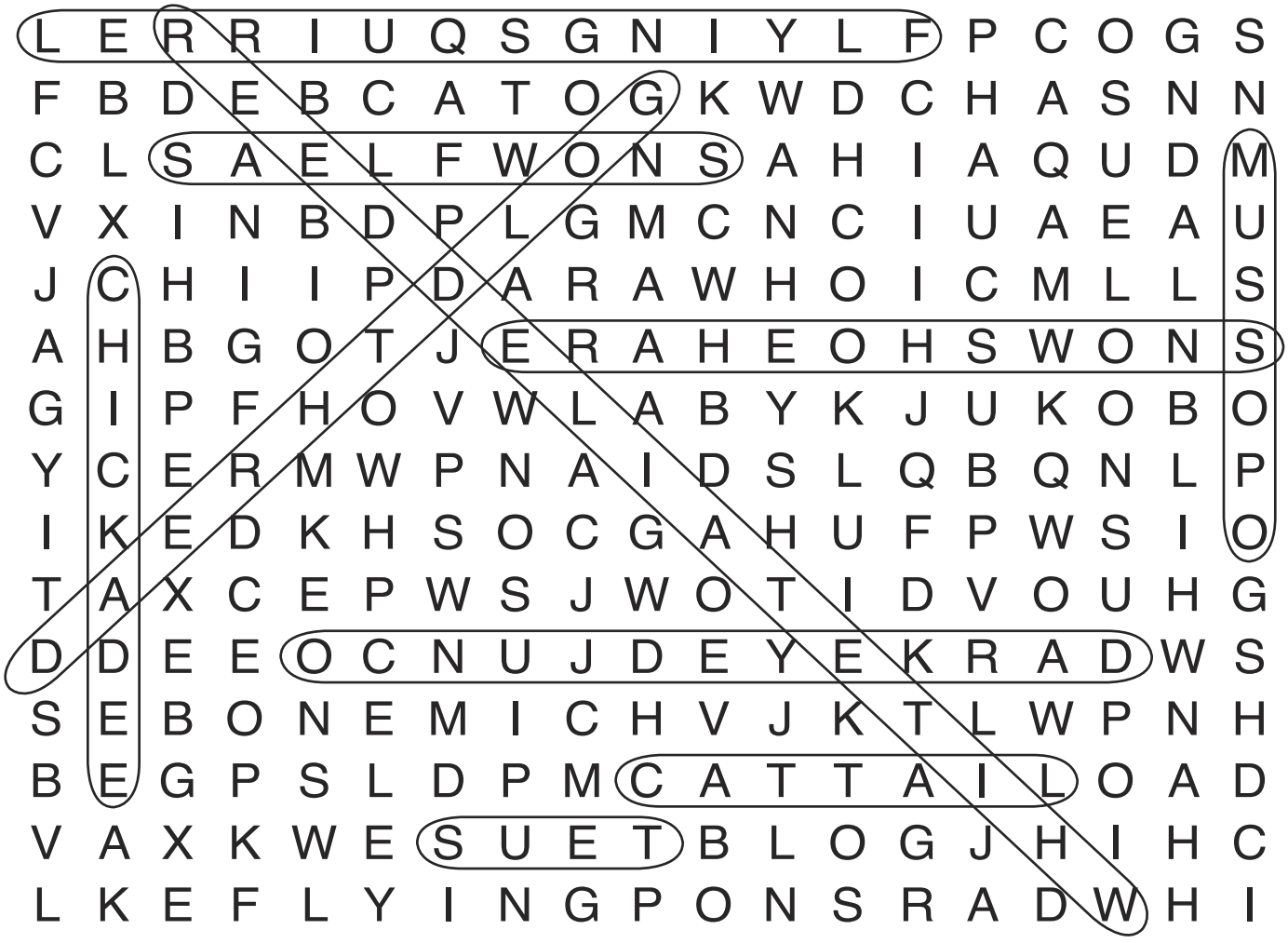
Eats birch polypore fungus in winter (three words). WHITE-TAILED DEER

On warm winter days, you'll see these tiny, jumping insects sprinkled over the snow in the forest (two words). SNOW FLEAS

This mammal sometimes makes its winter nest in a birdhouse (two words). FLYING SQUIRREL

The males of this bird species overwinter farther north than the females (three words). DARK-EYED JUNCO

Woodpeckers eat this fatty birdfeeder offering. SUET



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Writing Exercise

A Place in Mind, by Jere Daniell (page 76)

In his personal essay, Daniell writes of his favorite outdoor place. Look carefully at how Daniell constructs this essay—he names his place, states his association with it (39 years of visits), and then offers four reasons for his connection with it (fishing, wildlife encounters, woodland management, beauty). He fleshes out each of those reasons with vivid imagery.

What is your "Place in Mind"—where is the outdoor place to which you are most connected? Write an essay that describes your place and explains your connection with it, bringing that place to life by using vivid sensory images.

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Crossword Puzzle

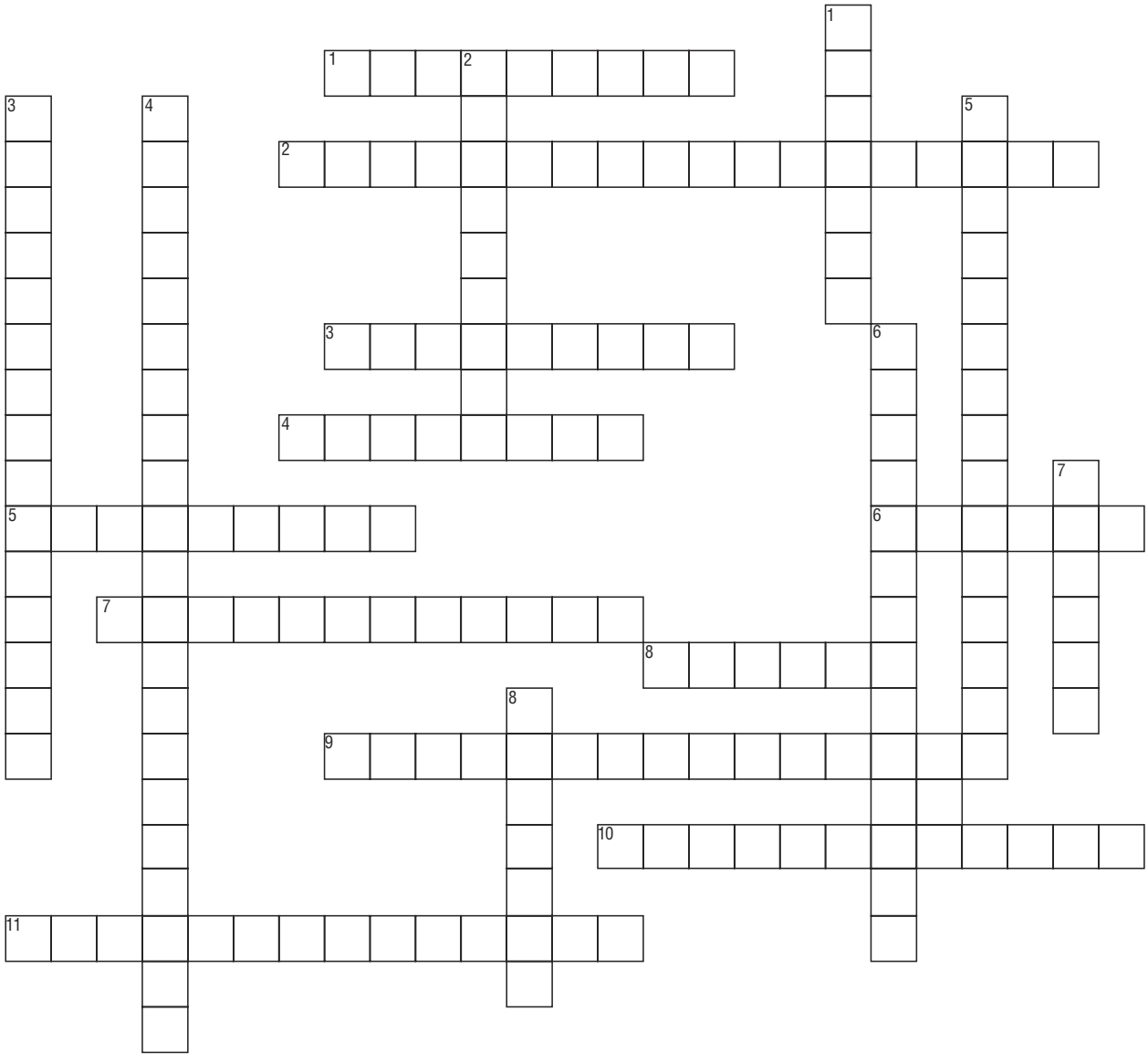
Winter Calendar (page 4)

ACROSS

1. Mammal that eats the bark off of treetops.
2. This migratory bird returns to its New England nesting grounds in February (three words)
3. The availability of bird feeders has allowed this bird species to expand its winter range to the north.
4. The aquatic larvae of this insect are active all winter.
5. Many bird species feed on the white seeds of this plant (two words).
6. During bad weather, this bird can roost for a week without feeding to conserve energy.
7. Bird species that eats larch seeds (two words).
8. This mammal leaves paired tracks in the snow.
9. Large mammal that feeds in cedar swamps (three words).
10. Winter finch (two words).
11. Longest night of the year (two words).

DOWN

1. This mammal becomes active on warm winter days.
2. This bird lowers its body temperature on cold nights to conserve energy.
3. Beetle larvae are a favorite winter food of this bird species (two words).
4. This bird species defends its 25-acre home territory year-round (three words).
5. Songbirds feast on the blue-black berries of this vine (two words).
6. This bird species is one of the earliest to breed (three words).
7. Mammal species that begins courtship rituals in mid-winter (two words).
8. December meteor shower.



Northern Woodlands

Crossword Puzzle

Winter Calendar (page 4)

ACROSS

1. Mammal that eats the bark off of treetops. PORCUPINE
2. This migratory bird returns to its New England nesting grounds in February (three words) RED-WINGED BLACKBIRD
3. The availability of bird feeders has allowed this bird species to expand its winter range to the north. GOLDFINCH
4. The aquatic larvae of this insect are active all winter. STONEFLY
5. Many bird species feed on the white seeds of this plant (two words). POISON IVY
6. During bad weather, this bird can roost for a week without feeding to conserve energy. TURKEY
7. Bird species that eats larch seeds (two words). RED CROSSBILL
8. This mammal leaves paired tracks in the snow. FISHER
9. Large mammal that feeds in cedar swamps (three words). WHITE-TAILED DEER
10. Winter finch (two words). PINE GROSBEAK
11. Longest night of the year (two words). WINTER SOLSTICE

DOWN

1. This mammal becomes active on warm winter days. RACCOON
2. This bird lowers its body temperature on cold nights to conserve energy. CHICKADEE
3. Beetle larvae are a favorite winter food of this bird species (two words). DOWNY WOODPECKER
4. This bird species defends its 25-acre home territory year-round (three words). WHITE-BREASTED NUTHATCH
5. Songbirds feast on the blue-black berries of this vine (two words). VIRGINIA CREEPER
6. This bird species is one of the earliest to breed (three words). GREAT HORNED OWL
7. Mammal species that begins courtship rituals in mid-winter (two words). RED FOX
8. December meteor shower. GEMINID