Northern Woodlands

Winter 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 Winter 2001 issue of *Northern Woodlands* magazine. Do black bears really sleep in caves during the winter? How is a birch seed adapted for dispersal? Is it possible for communities to meet the needs of both their human and nonhuman inhabitants? By reading this issue's articles, your students can address these questions and many 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 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; and 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:

Green Teacher magazine: This quarterly out of Toronto, Canada, is loaded with fun yet sophisticated and well-researched activities and units for teaching about earth-related subjects. They also offer two new books: Greening School Grounds, a guide to creating habitats for learning, and Teaching about Climate Change. For subscription and ordering information, visit their website at www.greenteacher.com or e-mail greentea@web.net.

Book for the Christmas Break: If your students are looking for a good novel to curl up with over the holidays, suggest *The Old American*, a novel by Ernest Hebert, reviewed on page 67. It will give them a captivating way to step back in history and immerse themselves in 18th-century New England.

Further Reading on Exotics: Are your students studying the ecological effects of introduced species? Do you have any students preparing for the 2002 Envirothon, in which "Introduced Species and Their Effect on Biodiversity" is the competition's featured topic? Check out *Tinkering with Eden*, by Kim Todd, reviewed on page 64.

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 Population Ecology (Communication Skills)

Biologists Warn Against Feeding Deer (page 14)

Many people are unaware of the harmful results of the well-intended feeding of deer in winter. Your students can raise public awareness of this in many ways. Have them work in teams to develop an education campaign of their choice. It could involve creating a brochure, writing an article for the local paper, creating a public service announcement for the local radio station, designing a bumper sticker.

The article encourages protection of winter deer yards as the best way to lend deer a helping hand in winter. Invite a wildlife biologist to the classroom to discuss deer habitat requirements and the threats to that habitat. They can also introduce students to the way in which biologists determine population size, health, and management.

Deer Crossing
History of Wildlife Management

ME — English Language Arts C, E, H; Science B

NH — English Language Arts 2, 7; Science 3b

VT — 1.11 Persuasive Writing; 5.29 Visual Arts; 7.13 Organisms, Evolution, and Interdependence

2. Preserving New Hampshire's Natural Heritage (Current Events)

Million Acres or Bust (page 17)

If you're going to dream, dream big. The Society for the Protection of New Hampshire Forests' sweeping initiative does just that, in a reader-friendly, 22-page report, *New Hampshire Everlasting: An Initiative to Conserve Our Quality-of-Life*. The report offers great fodder for classroom discussion and activities. Get copies of it and have students read it. Encourage them to withhold judgment of the proposal, at least for the initial reading, and instead to pay attention to the way SPNHF went about making its case. What factors did they consider as necessary for maintaining quality of life? (What was their Q of L index?) What actions do they recommend to mitigate the threats to those factors? What is their rationale for their proposal?

Have your students create a similar Q of L index and report for their community. What are the factors that create a good quality of life in your community? What are the threats to those factors? How could those threats be mitigated? What might be the opposition to those measures, and how might you transform that opposition into collaboration? Their research could include a community survey and interviews with a spectrum of community members. Encourage them to present their findings and recommendations to the town planning commission.

? For a copy of SPNHF's report, visit their website at www.spnhf.org or call 603-224-9945.

Planning for People and Wildlife
Shrinking Habitat

#50 400-Acre Woods
Focus on Forests High School Module: #3 Tough Choices

ME — English Language Arts A, B, E; Civics and Government A; Geography B

NH — English Language Arts 1, 2; Social Studies 4

VT — 1.3 Reading Comprehension; 1.7 Responses to Literature; 1.19 Research; 2.1 Questioning; 2.11 Abstract and Creative Thinking; 3.9 Sustainability; 4.6 Understanding of Place; 6.9 Meaning of Citizenship; 6.14 Forces of Unity and Disunity

CAREER CONNECTION

"Rites of Passage"
by Catherine Tudish (page 54)

It's not too early for your students to start looking into and applying for internships and volunteer opportunities for next summer. The Student Conservation Association sponsors volunteer work groups in all 50 states for 16-19 year olds through two programs, the Conservation Work Crews and the New Hampshire Conservation Corps.

SCA has an extensive alumni network. Contact them to find out if there are SCA alumni in your area. Have one come to your classroom to speak about their SCA experience and how it affected their life and career choices.

www.sca-inc.org. Your students will find program descriptions and listings of specific volunteer opportunities in all 50 states. Or call 603-543-1700.

www.serviceleader.org/advice/index/htm. This site provides information for would-be volunteers, including advice on how to find the right volunteer position, and listings of contacts for volunteer opportunities for students under 18.

www.fs.fed.us/people/programsvolunteer.htm. The US Forest Service hosts the Touch America Project, which offers volunteer positions for 14-17 year olds.

www.vycc.org. The Vermont Youth Conservation Corps is a private nonprofit organization that hires teams of young adults between the ages of 16 and 24 who work to complete high-priority conservation and park management projects on public lands in Vermont.

ME — Civics and Government A

NH — Social Studies 4

VT — 3.15 Career Choices

Suggested Activities

3. Perspectives on Conservation (Current Events)

Conserving Human Communities, Too by Ginny McGrath (page 75)

This article works well as a companion to "Million Acres or Bust," enriching the discussion of conserving quality of life by conserving both human and natural communities. This article poses the questions: Are issues of environmental and social justice related or fundamentally different? Can we address both issues at once or are they mutually exclusive? Can we attend to one and not the other? Have your students ponder these questions, first individually in writing, then as a part of a group discussion.

What natural resource issues are present in your community that polarize or threaten to polarize natural community and human community preservation? Have your students identify an issue and its polarized viewpoints, then brainstorm new approaches that could form a collaborative bridge between the two. Encourage them to risk unorthodox solutions.

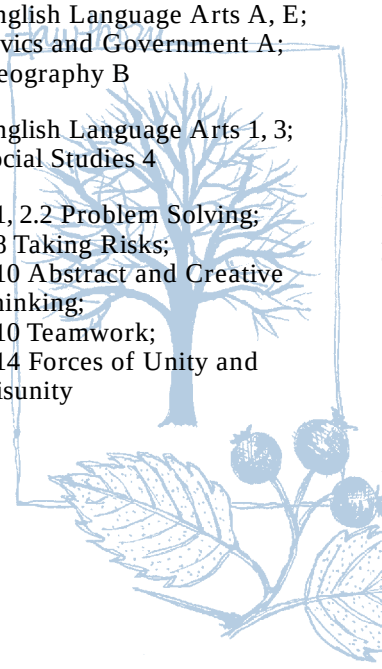
Shrinking Habitat Migration Barriers

#33 Forest Consequences
Focus on Forests High School Module: #1 What's a Forest to You?; Module: #3 Tough Choices

ME: English Language Arts A, E; Civics and Government A; Geography B

NH: English Language Arts 1, 3; Social Studies 4

VT: 2.1, 2.2 Problem Solving; 2.8 Taking Risks; 2.10 Abstract and Creative Thinking; 3.10 Teamwork; 6.14 Forces of Unity and Disunity



CALENDAR CONNECTION

Bearly Sleeping: A Bear's Guide to Winter Accommodations

by Warner Shedd (page 22)

This is the time of year that tests an animal's adaptations for survival. Have your students each choose a locally occurring, year-round animal resident and research how it survives the winter. Ask students to draw from at least one first-hand information source—a wildlife biologist, a community elder who is a hunter, or an experienced outdoors person from their area. As Warner Shedd does, students should look beyond common stereotypes and examine the most current research findings. Encourage them to include artwork, recorded interviews, poetry, or other creative media in their classroom presentation of their report.

Owls Aren't Wise and Bats Aren't Blind: A Naturalist Debunks Our Favorite Fallacies About Wildlife, by Warner Shedd. Random House: 2000.

A Guide to Nature in Winter, by Donald Stokes. Little, Brown and Co.: 1976.

Project WILD Appendix: Guidelines for Interviewing People

ME: Science and Technology A, B; English Language Arts H; Visual and Performing Arts A

NH: Science 3a; English Language Arts 2, 3

VT: 1.8 Reports; 1.19 Research; 1.20 Communication of Data; 4.6 Understanding of Place; 5.30 Visual Arts

4. Seed Search (Field Study)

Seeds on Snow by Liz Thompson (page 38)

Trees have a variety of fascinating ways to disperse their seeds. Take your students on a winter seed survey of your school grounds. See how many different tree seeds you can find. Identifying trees in winter can be daunting, but bark, buds, and seeds will provide all the clues you'll need if you have a good field guide along. Have students examine the seeds and hypothesize, based on the seeds' forms, their various modes of dispersal.

Have each student choose a locally occurring tree species and learn about its seeds and how they spread and germinate. Also ask them to project the population changes that might occur in their chosen species as a result of global warming (as described in the article). This will require them to develop an understanding of their tree's ecology—its habitat preferences and current range.

The Tree Identification Book, by George W. D. Symonds. William Morrow & Co: 1973. Excellent tool for identifying trees in winter.

#66 Germinating Giants
#43 Have Seeds Will Travel
#79 Tree Lifecycles
#22 Trees As Habitats

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

NH: Science 2a, 2b, 2c; English Language Arts 2, 3

VT: 1.8 Reports; 1.19 Research; 1.20 Communication of Data; 4.6 Understanding of Place; 7.1 Scientific Method; 7.2 Investigation

Suggested Activities

5. Natural Communities Mapping (Field Studies)

Why We Focus on Natural Communities, by Eric Sorenson (page 27)

Practice mapping natural communities with your students. Determine your study site: if your school grounds contain or are adjacent to natural areas, you can perform your studies there. If not, you may want to take your class to the town forest or other forested area. Obtain soils maps, topographical maps, infrared maps (if available), and aerial photographs of the area.

Invite a Natural Resources Conservation Service district soil scientist to show students how to take soil and rock core samples, so that students can begin to make the connection between the soil/rock underlying an area and the plant community that grows there. Invite an ecologist from your state's natural resources agency to help you identify the natural communities in your study area. Use the maps you obtained, along with your field data, to create a natural community map of the area.

Wetland, Woodland, Wildland, by Elizabeth H. Thompson and Eric R. Sorenson. University Press of New England: 2000.

On Natural Communities:

Vermont: Eric Sorenson, Agency of Natural Resources Non-game and Natural Heritage Program 802-241-3714

NH: New Hampshire Natural Heritage Program 603-271-2214

Maine: Andy Cutko, Maine Natural Areas Program 207-287-8043

For soil, topo, aerial maps: contact your state's NRCS office or local conservation district office

www.statlab.iastate.edu/soils/index.html. This USDA-NRCS Soil Survey Division homepage will put you in touch with state soil scientists and sources for maps.

www.nadcnet.org/about/staff.htm. Contact information for local conservation district offices

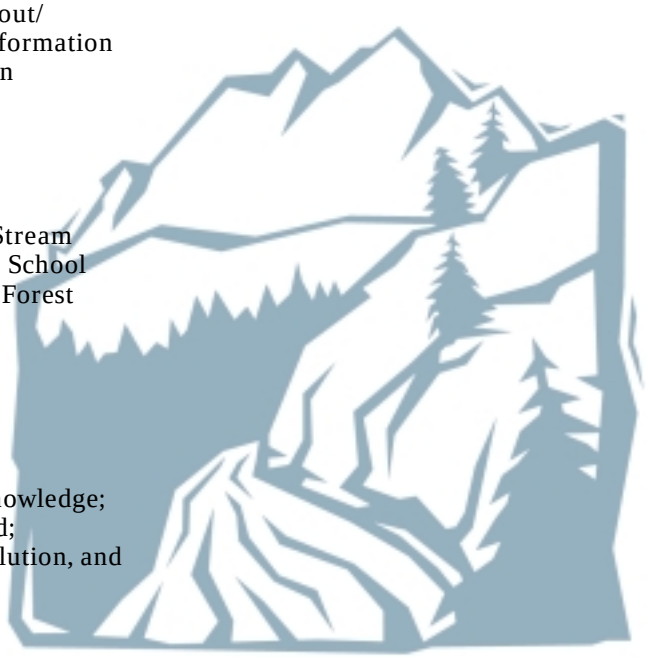
Who Fits Here?

#48 Field, Forest & Stream *Forest Ecology* High School Module: #1 Adopt a Forest

ME: Geography A; Science A, B

NH: Geography 10, 11; Science 2a, 3a

VT: 6.7 Geographical Knowledge; 7.1 Scientific Method; 7.13 Organisms, Evolution, and



WILDLIFE CONNECTION

Mammal Tracks

reviewed on page 14.

Take your students and this excellent guide on a tracking expedition. Tracks will be most clearly visible after a very light snowfall. Check out different habitats around the school grounds—forest, meadow, shrubby areas, wetlands—and have students record which animals' tracks they find in each area. Have them follow the tracks as far as they can to see where the animals go on their daily travels. The guide offers life-sized track illustrations. Bring along measuring sticks to record track stride and straddle.

Naturalists Barry and Warren King offer wallet-sized, laminated cards with the tracks of New England mammals arranged according to the general pattern the animal's footprints make in the snow or mud. Each print includes measurements; a small ruler is part of the card. 95¢/card for a minimum order of 25 cards. Their card series also includes NE Trees, NE Winter Twigs, NE Ferns, and Shells of Atlantic Beaches. You can mix and match to fill the 25-card minimum. 802-388-4082 or e-mail kinglet@together.net.

Tracks!

ME: Science and Technology B, L

NH: Science 1a, 2a, 3a

VT: 7.2 Investigation; 7.13 Organisms, Evolution, and Interdependence

Creative Writing Exercise

A Place in Mind,

by Doug Bechtel (page 76)

Read Doug Bechtel's essay all the way through. Now return to the beginning and read the first paragraph, paying attention this time to the rhythm and length of the sentences and how they help convey the sensory images he's creating. The short, clipped sentences—"No wind." "I huff a quick cloud of breath."—amplify the images associated with deep cold: precise movements; short, frosty breaths. Imagine how the sentence structure might be different if you were describing, instead, a scene taking place on a hot, lazy summer afternoon.

Experiment with writing two paragraphs about scenes that take place in two opposite environments: for example, summer and winter; hot, dry day and rainy day; day and night. Let your words and sentences reflect the feeling you want to create in your scenes.

Crossword Puzzle

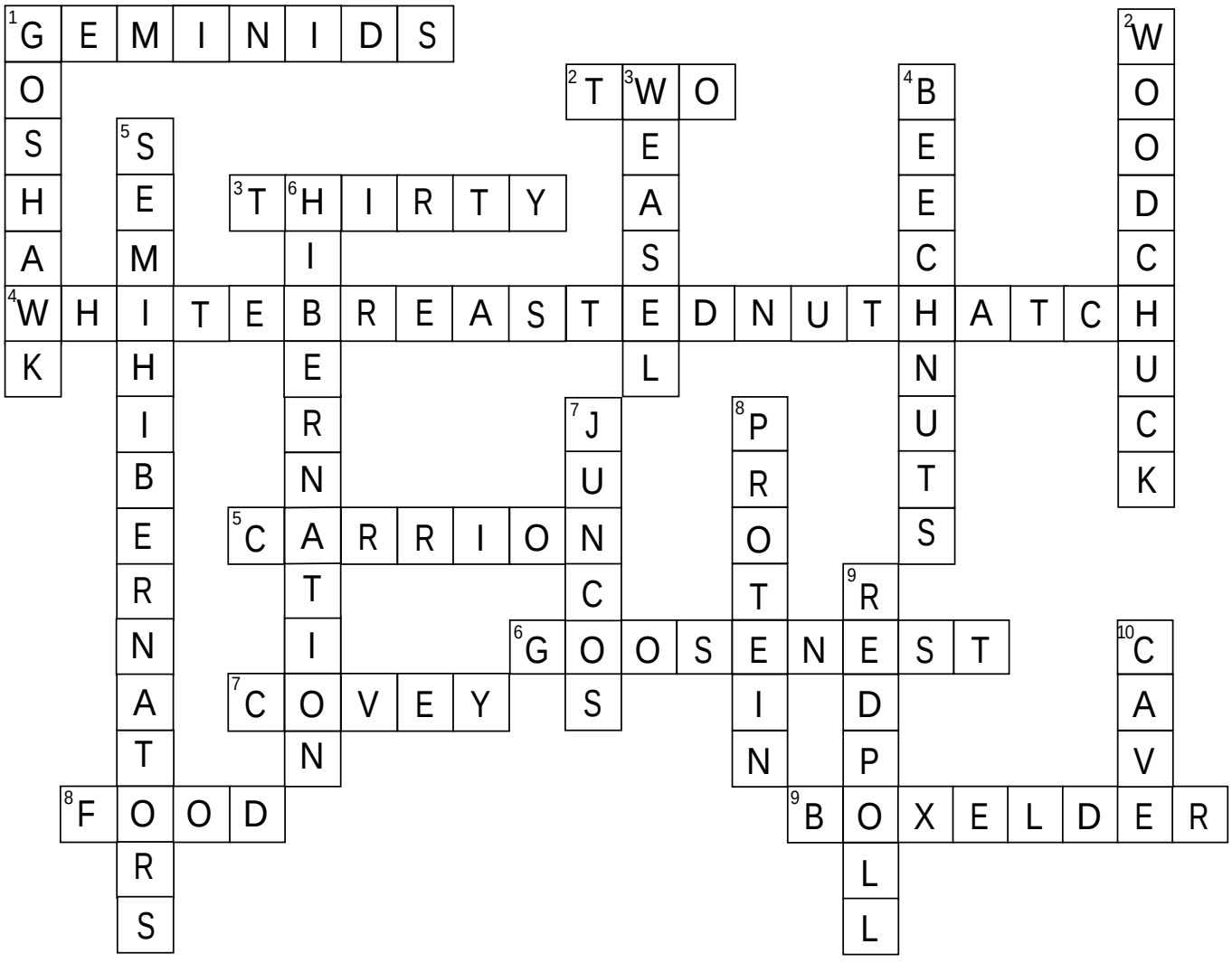
Calendar (page 4) and
Bearly Sleeping: A Bear's Guide to Winter Accommodations, by Warner Shedd (page 22)

Across

1. Late fall meteor shower. GEMINIDS
2. Number of cubs a black bear typically gives birth to every other year. TWO
3. Age, in years, a bald eagle can reach in the wild. THIRTY
4. This bird, once paired, will defend a 25-acre territory year-round. (three words) WHITE-BREASTED NUTHATCH
5. One of the chickadee's winter food sources. CARRION
6. Term for a bear den made of piled spruce limbs in a dense spruce thicket. (two words) GOOSE NEST
7. Group of grouse. COVEY
8. Shortage of this is the primary reason bears hibernate in winter. FOOD
9. The only maple that holds its seeds on its twigs throughout the winter. BOXELDER

Down

1. Bird that will attack and eat smaller birds. GOSHAWK
2. One animal that is a true hibernator. WOODCHUCK
3. Animal whose coat turns from brown to white in winter. WEASEL
4. Favored autumn food for black bears. BEECHNUTS
5. Term for animals, such as the skunk, that emerge frequently from their winter dens. SEMI-HIBERNATORS
6. Cause of sleep deprivation in some animals in winter. HIBERNATION
7. Winter food for screech owls. JUNCOS
8. Hibernating bears can convert urea into _____. PROTEIN
9. Bird species that favors birch seeds as winter food. RED POLL
10. Site bears seldom use for hibernating. CAVE



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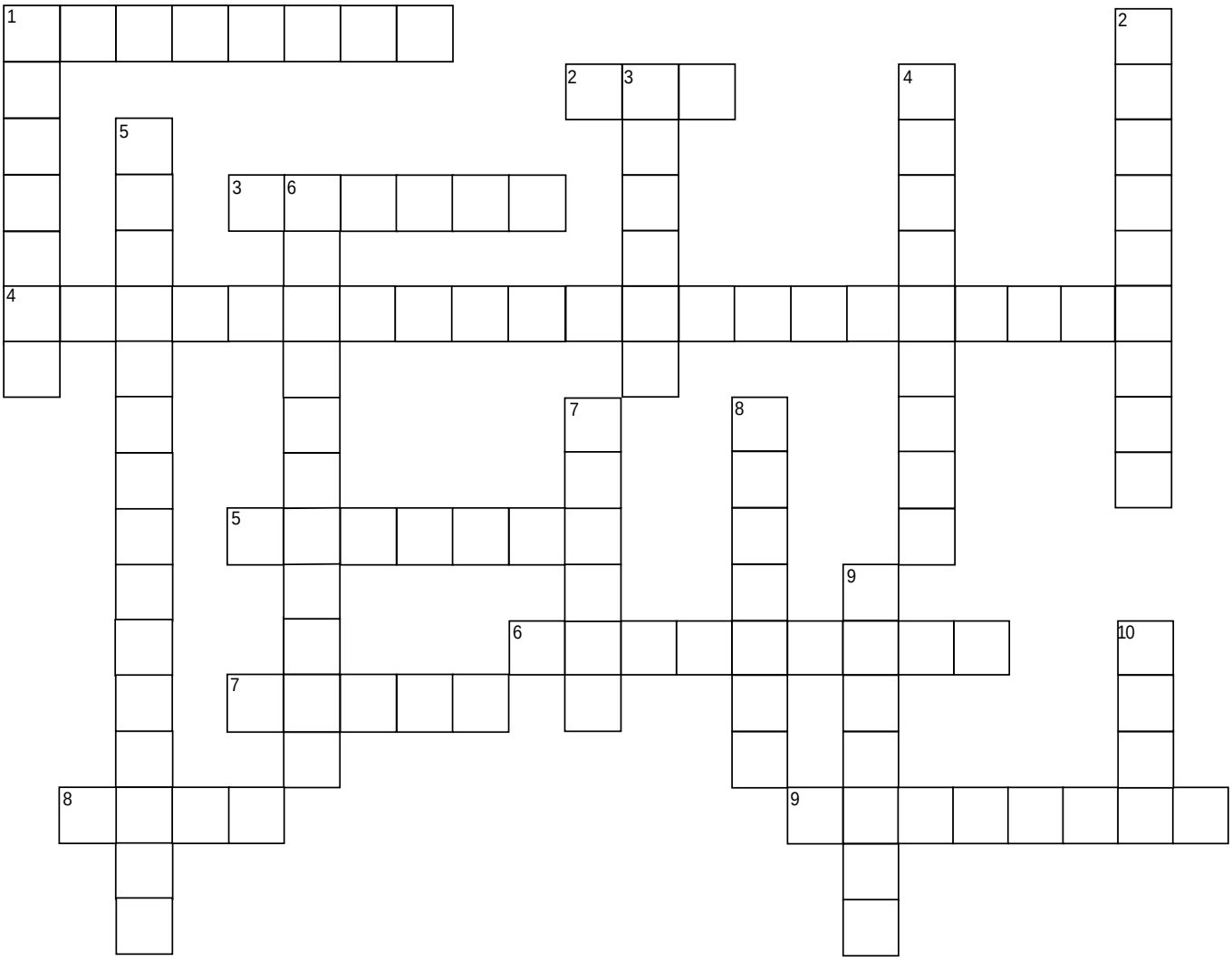

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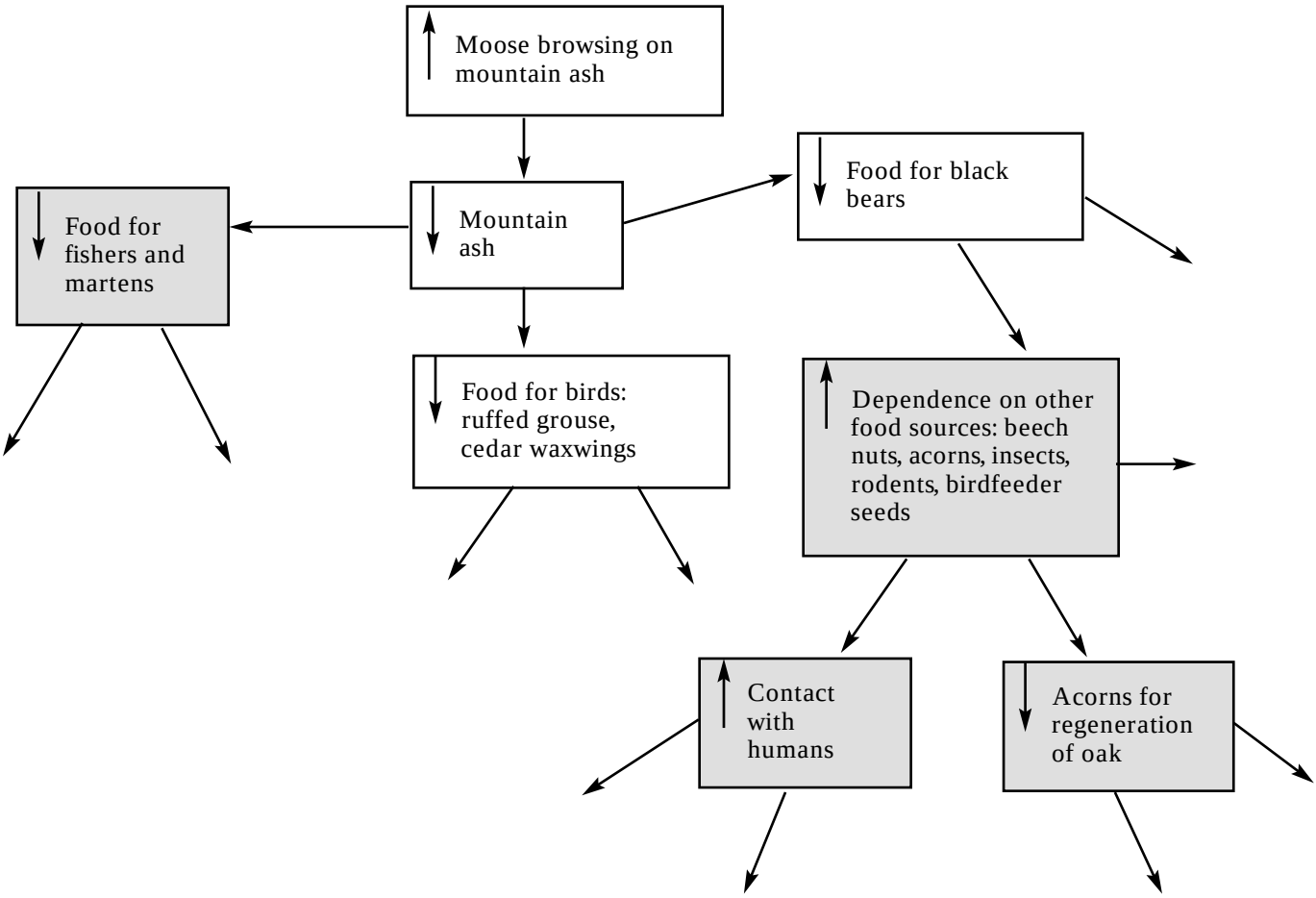
Balance in Nature

Cover Your Ash: The Moose are Coming (page 44)

Any time one plant or animal population changes in abundance, the change triggers fluctuations in other plant and animal populations which, in turn, trigger other fluctuations, in a rippling effect. The diagram below shows, in white boxes, the anticipated changes brought on by increased moose browsing on mountain ash, as described in the article. The diagram also offers, in the shaded boxes, other possible rippling effects of such moose browsing, and illustrates the near-limitless potential of such widening impacts.



Choose one of the following changes and graph the effects of that change as they ripple through the ecosystem. Think big; really ponder the potential effects of the change. Don't get hung up on whether or not your projection is correct—after all, you're projecting, making educated guesses as to the implications of this change.

1. Reintroduction of wolves to the Northern Forest

2. Increase in oaks due to global warming

3. Decrease in deer wintering grounds due to housing development