



Habitat for Life

A Resource Guide for Virginia Educators

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- **ACTIVITIES**

The activities included here are intended to help meet the Virginia Science Standards of Learning 3.6, 3.10 and 4.5. However, the activities can also be used to meet many other elementary standards for science, math and language arts.

 - 1) **Cracks in the Sidewalk**—from *20/20 Guide*
 - 2) **Habittracks**—from *Project WILD*
 - 3) **Polar Bears in Phoenix**—from *Project WILD*
 - 4) **Habitats for Sale**—from *Nature Scope*
 - 5) **Animal Apartments**—from *Dig In!*
 - 6) **Discovering Animal Communities**—from *Schoolyard Ecology*
 - 7) ...plus additional, reproducible student pages: Crossword Puzzle, Hidden Habitat puzzle, and sheets from the National Wildlife Federation
- Books and Web Sites on Schoolyards
- Environmental Education Resources

An Important Note about Photocopying:

The materials in this guide are intended for educational, instructional use only. Activities and worksheets may be reproduced for individual use or for direct distribution to teachers or students during workshops and programs. Because the activities are copyrighted, a monetary fee may not be collected in association with the photocopying or distribution of these materials.



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Background Information: What is Habitat?

The environment in which a bird, mammal, fish, reptile, amphibian, insect—or any other animal—lives is called its *habitat*. An animal's habitat is a place where all of its needs are met, and it includes food, water, shelter, and adequate space in an arrangement that is appropriate to the animal's needs. A habitat can be as small as a vernal pool (a springtime pool where frogs breed), as broad as the soil beneath our feet, or as vast as a forest through which bears range. Shelter can be protection from predators (escape cover) or a place to raise young (reproductive cover). Cover provides a safe place for one or more of the necessary functions in the lives of animals: breeding, nesting, hiding, loafing, sleeping, feeding, and traveling. For example, *buffers* are a type of cover that provide areas of shrubs and trees between areas of high human activity, so that wildlife may move about undisturbed. Without adequate cover, wildlife will not remain in a backyard or schoolyard habitat.

While the individual ingredients of food, water and shelter are all essential within a habitat, these basic components must be arranged in a way that they are most accessible to a particular wildlife species. *Habitat arrangement* is extremely important and refers to how different vegetation types and other features are situated in relation to each other. In general, the more variety there is in vegetation types and how they are arranged, the more diversity of wildlife (*species richness*) there will be. This means that if your schoolyard currently contains only lawn and a couple of trees, there is probably not enough plant diversity for your students to see much more than an occasional robin, sparrow or ant.

In an undisturbed setting, plants that occur naturally grow in many layers, rather than all at the same height. These layers are a critical part of habitat arrangement, and it is the layers that give a habitat its *structure*. The lowest layer, called the *herbaceous layer*, consists of short grasses and forbs (green plants that can include wildflowers, vines, briars, and other leafy matter). The next layer is the *shrub layer*, made up of small to large shrubs, like spicebush, hazel alder, rhododendron and viburnum, as well as small trees, like sumac, redbud and dogwood. The last layer of vegetation is the *canopy layer*. This layer overarches all the others and is made up of the tallest trees, like maples, oaks, ashes and hickories.

Since all wildlife species are highly adapted to particular habitat types and foods, many wildlife species either feed, nest or rest only at certain levels within these layers of vegetation. In the typical schoolyard—which usually contains only grass and an occasional large tree—whole layers of vegetation are missing. The wildlife that would be associated with those layers are therefore missing, too.

You can improve habitat around your home or school by adding the missing ingredients. Provide water sources such as a bird bath for perching birds and a small water garden at ground level for other creatures like frogs and small mammals. Provide food and cover by planting shrubs and small trees that provide nectar, fruit and evergreen protection from winter winds. Plant in clumps to provide a more natural structure and more depth for cover.

The Schoolyard Habitat as Outdoor Classroom

A Living, Learning Lab

Ever notice how kids' eyes light up when they see a butterfly land on a flower just out of reach, or a colorful beetle crawl across a leaf? "Ooooh, loook!" they exclaim, fascinated by nature's wonders. Many Virginia schools are learning how to take advantage of this natural affinity that children have towards wildlife by planting wildlife habitats on school grounds and using them as outdoor classrooms.

An "outdoor classroom" is an extension of the indoor environment, a living laboratory right outside the door where students can apply concepts from science, language arts, math and other subject areas. The indoor school environment has tables, desks, books, computers, microscopes; the outdoor environment has plants, soil, water and living organisms. Because both environments contain unique features, each one can complement the instruction that occurs in the other. Schoolyard habitats are ideal settings for measuring, sampling, journaling, hypothesizing, comparing, contrasting, observing—and numerous other skills. In fact, the number one reason for the success of schoolyard habitats is that they link students' fascination of nature with the objectives of the state Standards of Learning.

Using the SOL's to Advantage in the Schoolyard

Since planning and planting a wildlife habitat on school grounds will give your students experience in researching, measuring, writing and scientific inquiry, there will be many instances where the gardening "process" meets several Standards simultaneously. The most obvious "fit" between habitat-based activities and the SOL's is with the Science Standards. Learning in an outdoor classroom meets all of the K-6 ".1" Standards of *Scientific Investigation, Reasoning and Logic*, because a wildlife habitat of food, water and shelter provides all the real life materials for recording data and for making predictions, observations and inferences. Also, there are numerous correlations to the *Life Processes* and the *Living Systems* strands.

For example, in the 3rd grade science standards (3.4), students must "investigate and understand that behavioral and physical adaptations allow animals to respond to life needs" by studying camouflage and mimicry of animals and how they find food and shelter. In the schoolyard, students can observe the adaptation and life processes of many types of insects and spiders. You could also set up a bird feeding station to observe feeding preferences and how birds' beaks are adapted for particular types of food.

Similarly, in the 4th grade science standards (4.5), students must "investigate and understand how plants and animals in an ecosystem interact with one another and the nonliving environment" by studying habitats, life cycles and food webs. A schoolyard rich in plant diversity will provide numerous opportunities to see such interactions first-hand: the concepts become concrete, rather than remain abstract.

There are many other correlations as well, particularly for mathematics and language arts. In the Math Standards, for example, elementary students are required to master some aspect of "Measurement," whether it be simple linear measuring with basic tools and scales or converting measurements to metric. When you work with students in developing and maintaining a schoolyard habitat, they can measure the area they want to plant, draw it to scale on paper, divide it up into various planting beds, space their plants a certain number of feet apart, and so forth.

Books and Web Sites on Schoolyards

BOOKS ON HOW TO START A SCHOOLYARD HABITAT PROJECT

- ***Conserving and Enhancing the Natural Environment: A Guide for Planning, Design, Construction, and Maintenance on New & Existing School Sites***, by Maryland State Department of Education; c. 1999; 80 pages; \$20.00—call (410) 767-0098.
- ***Educational Landscapes: Developing School Grounds as Learning Places***, by Nancy Takahashi, c. 1999, 63 pages, published by Thomas Jefferson Center for Educational Design, University of Virginia, Charlottesville VA 22903; \$20.00—call (804) 982-2866.
- ***Greening School Grounds: Creating Habitats for Learning***, edited by tim Grant and Gail Littlejohn; c. 2001 by Green Teacher Magazine; New Society Publishers, BC Canada; 138 pp; \$16.95—call (416) 960-1244 or order online at www.greenteacher.com
- ***Homes for Wildlife: A Planning Guide for Habitat Enhancement on School Grounds***, by Marilyn C. Wyzga; published by New Hampshire Fish and Game Department, Concord NH 03301; 137 pages; \$18.95 + shipping and handling—available from Acorn Naturalists, item # B-5668, call 1-800-422-8886.
- ***WILD School Sites: A Guide to Preparing for Habitat Improvement Projects on School Grounds***, c. 1993, a publication of Project WILD, Council for Environmental Education, Gaithersburg, MD 20878; 56 pages; \$5.00 + shipping and handling—call (301) 527-8900, or visit the web site at www.projectwild.org and click on Materials, then scroll down to the guide.

BOOKS ON HOW TO USE THE SCHOOLYARD HABITAT PROJECT

- ***Schoolyard Ecology Teacher's Guide***, Grades 3-6, c. 1998 by the Regents of the University of California, 112 pages; \$16.00 + \$4.50 shipping and handling; call (510) 642-7771, e-mail gems@uclink4.berkeley.edu, web site www.lhs.berkeley.edu/GEMS, or write Great Explorations in Math and Science, Lawrence Hall of Science # 5200, Uof C, Berkeley, CA 94720-5200.
- ***Critters: Life Science AIMS Activities for Grades K-6***, by Maureen Allen et al., edited by Hillen, Wiebe and Youngs; c. 1992 AIMS Education Foundation, Fresno CA 3747-8120, 152 pp.; 1-888-733-2467 or www.AIMSedu.org
- ***The Curious Naturalist: A Guide to Understanding and Exploring Nature***, by Diane Ackerman, c. 1998 by National Geographic Society, Washington DC [ISBN 079-227-3567].
- ***Dig In! Hands-on Soil Investigations***, Beth Daniels, editor; c. 2001 by National Science Teachers Association; NSTA Press, Arlington VA 22201-3000; 129 pp.
- ***Eco-Inquiry: A Guide to Ecological Learning Experiences for Upper Elementary / Middle Grades***, by Kathleen Hogan; c. 1994, Institute of Ecosystem Studies, Millbrook, NY 12545, (914) 677-5343 (392 pp.).
- ***The Growing Classroom: Garden-Based Science***, by Roberta Jaffe and Gary Appel; c. 1990 by Life Lab Science Program, Inc.; Addison-Wesley Publishing Co., NY (480 pp.); \$ 33.75 + handling; call 1-800-538-7476, e-mail sales@garden.org, or write National Gardening Association, 180 Flynn Ave., Burlington VT 05401.
- ***Field Detectives: Investigating Playground Habitats (AIMS Activities for Grades 3-6)***, by Suzy Gazlay, edited by Betty Cordel; c. 1998; 162 pages; call 1-888-733-2467, web site www.AIMSedu.org or write AIMS Education Foundation, P. O. Box 8120, Fresno CA 93747-8120.
- ***Gardening for Nature: A Teacher's Guide to Hands-on Activities for Wildlife Gardening***, a publication of the Virginia Museum of Natural History, 53 pages; \$5.95 plus shipping and handling; call (540) 666-8600, web site www.vmnh.org/info.htm, or write VMNH, 1001 Douglas Ave., Martinsville, VA 24112.
- ***A Guide to Observing Insect Lives***, by Donald Stokes, c. 1983, Little, Brown & Co., Boston MA; 371 pp. softcover.
- ***Model Inquiries into Nature in The Schoolyard (The MINTS Book)***, by Frank Taylor, Alan Raflo, and Llyn Sharp; c. 1997; 290 pages; \$18.95 + .85 tax + \$3.00 shipping; call (540) 231-5307, e-mail mints@vt.edu, or write Virginia Tech Museum of Natural History, 428 N. Main St., Blacksburg, VA 24061-0542.
- ***Wildlife in Today's Landscapes: Leader's/Teacher's Guide***, by Marianne E. Krasny; c. 1991, published by Media Services, Cornell Cooperative Extension, Cornell University, Ithaca NY; 63 pages; publication # L-5-20; \$14.00, www.mediasrv.cornell.edu or www.cce.cornell.edu/publications/catalog.html

Other Excellent Schoolyard Habitat Web Sites

National Gardening Association has a wealth of information at www.kidsgardening.com. Contains discussion forums, a school garden registry, grant resources, classroom success stories, fact sheets about plants, frequently asked questions, and much more.

The **National Wildlife Federation** sponsors a very informative Schoolyard Habitats web site at www.nwf.org/habitats/schoolyard/. Provides basic tips, grant information, news and features, and links to sample sites.

The Green Brick Road, at <http://gbr.org>, a non-profit organization for environmental education that gives you access to International Schoolgrounds Day, a project of the Learning Through Landscapes (UK) program which emphasizes planting habitats on school properties. Includes many schoolyard references, teaching and learning skills that use various subject areas on school grounds, and organizations around the world that sponsor “naturalization” projects.

The Evergreen Foundation is a Canadian web site at www.evergreen.ca/home.html. On the home page click on “Natural Schools” and then on their “Learning Grounds Resource Package” for lots of great information, such as curriculum ideas, tips on choosing plants, and an annotated bibliography of numerous articles and other publications.

The **U. S. Fish and Wildlife Service** has a 133-page publication called *Schoolyard Habitat Project Guide*, which may be downloaded from their Chesapeake Bay Field Office web site at www.fws.gov/r5cbfo. Scroll down to “Schoolyard Habitat” from the main page.

School Nature Area Project (SNAP) at www.stolaf.edu/other/snap, a resource of St. Olaf College, Minnesota, contains grant information, a sampler of successful school projects, back issues of their newsletters, and other resources and links.

American Horticultural Society, www.ahs.org: click on “Gardening School” which will take you to another menu; then choose “Kids Grow” for information about designing and choosing plants for a butterfly garden.

Classroom Connect, at www.classroom.net, a web site for K-12 teachers and students that provides search engines for countless links to general education sites and thousands of schools on-line (called the “Classroom Web”).

The **Butterfly Web Site** at <http://mgfx.com/butterfly> (or www.butterflywebsite.com) has information and articles about butterfly gardening. There is also a link called “Schoolyard Grants” at the bottom of this home page.

The home page of **Project WILD**, the international wildlife education supplementary curriculum program, is at www.projectwild.org. Scroll down to “Supplementary Materials” to find resources such as the *WILD School Sites Guide* and the *Exploring School Nature Areas* video.

For additional environmental education resources and links, log onto EE-Link at <http://eelink.net/>
