Helping an Old Friend: Our Own Backyard

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INTRODUCTION

"There they are! There they are!" whispered a couple of excited first graders, pointing to many little creatures moving around as I carefully lifted a log that was lying on the ground at the park across from our school. Their classmates responded with matching excitement and gathered around the log, hoping to see what their friends were talking about.

It was a magic moment five years ago on an otherwise regular teaching day. Perhaps we did not know a lot about nature, but emotion carried us with each finding we made on a day we had the opportunity to hold our science class outdoors. I encouraged the children's curiosity by pointing at the creatures and asking: "What do you think? Do all these creatures live here? Or are they just passing by?" The children turned their heads toward me with a puzzled expression until one of them was brave enough to ask the question that perhaps many of them were unwilling to ask: "What are you talking about? They are just a bunch of bugs; they are everywhere!" After asking them if they were interested in the homes of this particular bugs and receiving a positive reply, I began to tell my students that we were going to mark some of the insects with a special white paint and a very tiny brush. The next day we went back to observe under the same log, and, sure enough, our marked subjects were still there under the log.

Over the next three weeks, the children took on the role of entomologists, studying live specimens. As active investigators, they were very diligent with keeping a journal to draw pictures of the specimens we found. Students used magnifying glasses, observation tubes, and mirrors to observe, measure, classify, hypothesize, and predict the behavior of our subjects. We learned the names of some specimens by looking for their pictures in encyclopedias and other books. We also hypothesized as to why our subjects stayed under the log, as well as what the log provided for them. Activities like this one get children excited about learning in a way that few other approaches can.

Our school, Benbrook Elementary, is located next to Brickhouse Gully and Langwood Park. In the past, my students and I have been able to explore and directly observe animals in their own habitat. This was a tremendous opportunity for students to see a natural habitat first-hand. During the last five years, more people have moved into our area and have done away with the grass, plants, and logs that used to be present. Little by little, the bayou has become more polluted with garbage, paper wraps, and many other things. Last October, during a heavy rain, the bayou overflowed into our backyard, giving us an opportunity to see the pollution from the bayou right on our playground after the water subsided. The following morning, in the playground next to our classroom, we

saw empty wrappers, bags, paper, plastic containers, and a good number of plastic balls, which caught my students' eyes right away. Just before they ran to collect the balls, I stopped them and pointed out the rest of the items laying on our yard, as well as some dead animals. That morning, we had our science lesson in our backyard and discussed the great impact that humans can have in diminishing and destroying wildlife habitats as well as our own playing area (seeing as children were not able to play in the playground that day). We discussed different ways we could help our environment just by being more responsible and not dumping our trash in the bayou or the park.

Good teaching should involve realistic experience for students. At some point they should become aware that they are part of a larger community and their actions toward their surroundings have consequences that will affect them later. They need to learn that every location where humans have lived contains a community of plants, animals, insects, and other natural resources. Our children should become aware that a community of organisms and other natural resources and their interactions with each other is called an ecosystem. They should learn that exciting discoveries are as near as their own backyard. Just one small square is alive with creepers and crawlers, lifters and leapers, singers, buzzers, climbers, builders, and recyclers. The backyard invites children to become nature lovers by looking, listening, touching, and smelling the world.

Our personal experience has brought the need to put together a teaching unit that will help the children of our community and their parents become aware and learn about the environment and consider the things they can see not only in their backyards, but throughout Houston as well. I want my class to become more aware of the names of the plants and animals they see and often take for granted, their own influence on their surroundings, and how they can take positive action to improve the place where they live.

Our neighborhood park, our schoolyard, and Brickhouse Gully have provided an opportunity for the children to discover that nature is not something that exists in far away places, but rather something that surrounds them, includes them, and needs their help. However, because more people have moved to our area and done away with the grass and plants, the park has become a barren landscape of frayed, grassy remains. There are only two trees left out of what was originally many. Little by little, the bayou has become more polluted with garbage, paper, and various other things.

Many students attending Benbrook live in the apartments nearby, making them more isolated from the environment. Having an inviting place at school or in the park, in which to learn about and encounter nature is more important than ever before. Expanding students' knowledge of the world is imperative, especially considering that half of my class has never been to the beach, despite our proximity to it. The only body of water that they have ever known is the bayou next door.

Last year the standardized test that our students took asked questions such as, "If I am on the beach looking toward the water, what picture shows the water as a liquid and as gas?" The lack of exposure to nature makes questions like this very unfair to my

students. In situations such as this one, where children do not have many opportunities to investigate nature, they should be encouraged to enjoy and become more aware of how to observe and nurture the nature around them. In the context of learning to measure and count things in nature (see Lesson Plans), the children will be exposed to natural elements in their own backyards. Over time, this exposure may evolve into appreciation and even concern, which will, in time, encourage them to balance the needs of commerce and nature and maintain the natural areas around them. At the very least, they will have a better chance at successfully answering naturalistic questions on standardized questions.

With people increasingly spreading out, habitats are rapidly disappearing and becoming less capable of supporting life. We can help our world by nurturing the nature we have in our yards. Furthermore we can attract wildlife to our yard if we provide what they need: food, water, shelter, and a space to survive. A goal of this unit is to help the children of our community as well as their parents, to become aware and learn about the environment, partially by associating the things they can see not only in their backyards, but in Houston as well.

ECOSYSTEMS

The specific lessons mainly involve counting and inventory. Before we start the individual lessons, the children need to be introduced to the concept of a system and the interactions among disparate elements of the system. In this context, I introduce the idea of the ecosystem and how living and non-living things interact and exist as an integral and functional part of what we call the natural world. The specific inclusion of non-living things is especially important, as I believe the children are unaware of how the non-living world shapes and protects the living world.

In order for the students to understand their influence on the environment, they must first understand the interrelationship between the animals and their environmental habitats. A habitat is a place to call home, with enough air, food, and room to grow. Children must realize that every animal has a job to do in an ecosystem. For instance, we would not find a squirrel living in the middle of the ocean or a fish on a tree; each animal needs to live in a habitat that is right for it. Students need to learn how an ecosystem operates, what connections are necessary in order to preserve and ecosystem, and that we need to preserve an ecosystem in order to continue on in this planet. If we do not do that, we will not have a planet to live on anymore. To understand an ecosystem, students need to know its components and how they interact. Children must learn that an ecosystem is a place where plants and animals interact with each other and with everything around them, both biotic (living) and abiotic (nonliving). It also involves an ever-changing environment that is influenced by natural or human activities. An ecosystem includes not only the species inhabiting an area, but also all of the features of the physical environment. For instance, energy cannot be produced without the consumption of matter; the pyramid of life, therefore, has a wide base of vegetation, a smaller level of herbivores that feed on plants, a much smaller number of carnivores that feed on those

who feed on plants, and a number of omnivores that feed on meat and plants. This food chain causes the exchange of energy, gases, water, and minerals amongst the biotic and the abiotic components of a particular ecosystem.

Biotic (Living Organisms)

Over time, students should observe and describe an animal being studied (mealworm, pill bug, butterfly, snail, guppy, milkweed bug, etc.), as well as its environment. They should make note of how the animal interacts with other organisms of the same kind, how it reacts to humans, and how it interacts or might interact with other kinds of animals. Students will gain knowledge that ecosystems have many different living organisms that interact with each other. The living organisms in an ecosystem can be divided into three categories: producers, consumers, and decomposers (Campbell 1198-1214).

All three are important parts of an ecosystem. Producers are the green plants; they make their own food. Almost all kinds of animals' food can be traced back to plants. Consumers are animals, and they get their energy from the producers or from organisms that eat producers. There are three types of consumers: herbivores, which are animals that eat plants; carnivores, which are animals that eat herbivores and sometimes other carnivores; and omnivores, which are animals that eat plants and other animals. The third type of living organism in an ecosystem is the decomposer. Decomposers are plants and animals that break down dead plants and animals into organic materials that go back into the soil. The children will learn how dead plants and animals are broken down by other living organisms and how this process contributes to the system as a whole. Students will investigate how changes in a habitat affect the animals that live there and identify and describe ways in which the animal being studied depends on living and non-living things in its environment to meet its needs. An animal may depend on living things, such as specific plants that certain insects feed on, or non-living things, such as humid soil or a rock to provide shelter.

Abiotic (Non-living)

Non-living things can be as important as plants and any other living thing in providing good habitats for wildlife. Students will become aware that it is the interrelationship between the living and the non-living things that makes an ecosystem either thrive or deplete. For instance, the environmental temperature is an important factor in the distribution of living organisms on earth. Not all organisms can regulate their temperature precisely; many, such as reptiles, depend upon the environmental temperature to keep their bodies warm. Sunlight provides the energy that drives nearly all ecosystems. Plants produce their own food in the presence of sunlight; also, the presence of light is a more reliable indicator than temperature for cueing seasonal events, such as flowering or migration.

Water, although non-living, is essential to life, but its availability varies among habitats. Certain animals and plants thrive in freshwater, while others live submerged in salty water. The evolution of organisms in terrestrial environments has been shaped by the requirements for obtaining and conserving water. Students will study differences between organisms in a variety of ecosystems shaped by water availability, such as those who thrive in a rainforest and those who survive in the dessert.

Another important non-living factor is the wind, which amplifies the effects of environmental temperature on organisms by increasing heat loss due to evaporation. It also contributes to water loss in organisms by increasing the rate of evaporation in animals and transpiration in plants as well as determining the shape of plants.

Rocks and soil, although non-living, play an important role in shaping an ecosystem. They provide the physical structure that determines which organisms attach or burrow in a habitat. The mineral composition of the rocks and soil can affect water chemistry, which in turn influences resident plants and animals.

Now that the elements of a system have been explored, we will spend most of the remainder of the unit learning how to count things, make notations, and present these counts and notations in a fashion that can be used to answer fundamental questions about our backyard. I begin with the idea of making an inventory. Even though this unit is about nature, making an inventory is a fundamental concept in commerce as well as in science. Simply put, if we want to fix something (assuming it needs fixing), we need to know what is broken; thus, the inventory is the first step in identifying broken or missing elements. Even if the students entirely lose interest in nature, they will need to remember the importance of an inventory in their later lives, so this unit is important for lifelong progress, regardless of its underlying topical focus. More likely, I believe that making inventories will remind them of nature over their lives and thus bring back memories of their "backyard" when they were at Benbrook.

Making an Inventory of Wildlife, Plant Species, and Non-living Things

I currently teach a second grade bilingual class. Our students, as I previously mentioned, have had very little outdoor exposure in terms of learning about their surroundings. I want to inspire them to apply their classroom knowledge to real-world situations by investigating local ecosystems. While engaging in these lessons, students will learn the components of a habitat and the specific needs of species such as birds, frogs, and butterflies; study the interdependence of plants and animals; recognize invasive species; and understand how community values impact the creation of a wildlife habitat.

Before going outdoors, I will have a lesson to discuss places to look for signs of life by tapping into the students' prior knowledge about these places. The students will learn to look in places such as in the air for high flying or soaring birds; around plants for flying insects; or in shrubs or trees for signs of eggs, nests, insects, spiders, and bird droppings. Some other places where children can look for signs of life are in the crevices

of bark for nests, beetles, and other small organisms and in humid places, near plants, and under pots for snails and pill bugs. The students and I will go over the categories and discuss any questions they may have. Also, while reviewing and as a safety precaution, I will remind the students to refrain from touching any animal or putting anything in their mouths; we are there to observe.

Students will become aware that we are dependent on the Earth's dynamic natural systems and can participate in responsible actions to enhance and protect the quality of the environment. In order for students to understand that they can participate in enhancing and protecting the quality of the environment, I will encourage them to explore and investigate the fascinating natural world in our own backyard.

Venturing Outdoors

My students will begin the study of this unit by observing, keeping records, and comparing our school grounds daily for two weeks. Each student will be assigned to a small area. They will record all living and non-living things that they can see, whether their spot is sunny or shady, as well as other students' activity in the spot observed. The children will graph daily the number of things found and the activity observed. The data collected will be loaded and studied in an Excel spreadsheet in order for the students to visualize in a graph the data collected.

While determining what habitat components are present, the students and I will begin to identify animals and plants. Identifying what species of plants and animals are present will help us to focus our efforts. Information on what plants are present on our property can help us identify exotics for removal or native plants that we will want to preserve. An inventory will also give us something to compare against as our enhancement efforts progress and enable us to study how to be successful at attracting wildlife. Once we have identified what habitat components are present in our schoolyard, we will look at our neighborhood and determine what habitat components are present in comparison with our schoolyard. Part of our determination will involve answering these questions: If there are any missing habitat components in our area, is it possible to provide that component on our property? Will providing this component meet our goal for the land or should we look at providing another habitat component?

We will conduct an inventory seasonally to ensure that we identify the full range of species utilizing our yard as well as Langwood Park, and what time of the year they are present. Information on when different animals are present will help us to determine when food resources should be available and help us to select plants to provide. Conducting an inventory seasonally will help us see which animals are present during a part of the year. By using a field guide and Internet resources, students will identify animals present year round as residents and those that are present during only a part of the year as temporary or migratory. The seasonal inventory will also allow us to explore simple relationships (correlations) between time of year and species present, as well as habitat character and species present. For example, we should see the American robin in

some abundance in the springtime, but in the late Fall, there should be far fewer robins. As a migratory species, the robin passes through Houston these two times of year. Some robins winter over and can be seen year round, but the great abundance I have witnessed at Benbrook in the spring. Once we have our inventories, we can use the data to suggest questions like, "Why are the robin counts higher in the spring and much lower just before Christmas break?" The students will see these differences in their inventories and can do library and Internet research to try to answer the questions posed by their own data.

Once we collect our data, my students and I will research and discuss the possible reasons for plant and/or animal population size. This discussion will make students aware of the names of the plants and animals we see and have taken for granted, their influence on their surroundings, and how we can take positive action to improve the place where they live. The data collected from the study of our back yard will ultimately help us pick the best spot to build a nature center to bring wildlife back to our area.

In order to learn about the living environment, my students will begin this unit with a collection of schoolyard activities. As students observe their environment, they should have many opportunities to record their observations as well as communicate their findings using words and pictures. To help students understand the interrelationships of animals with components of their natural ecosystem, I will provide a variety of activities and projects about living organisms and ecosystems, including lessons for social studies, science, math, art, reading, and writing. In these lessons, students will observe living organisms in a local ecosystem and create detailed maps, drawings, and descriptions of said organisms. These activities will be used with other indoor projects such as building bottle ecosystems, to give students an understanding of how ecosystems work and how all aspects of an ecosystem are interrelated.

Overall, students will become familiar with animals and the habitats in which they live and thus become aware that the amount of suitable habitat for a species of wildlife will determine the number of animals that can survive in the area. They will also learn how human activity has the greatest impact on the amount and quality of a wildlife habitat. In addition, they will become aware that a wildlife habitat can be destroyed or its quality diminished as a result of human sprawl, agricultural practices, pollution, sedimentation, or habitat fragmentation. Students will also learn that people can have a positive impact on wildlife populations through improvement of habitats or ecosystems. In short, students will become very aware of the things that people can do to improve habitats and what they can do to improve our own school area's habitat for wildlife.

LESSON PLANS

The lesson plans I have developed are focused on simple sampling techniques and presentation of results. Two lesson plans focus on the use of a sample frame (representative elementary volume) for repeatable counting of things in nature. The purpose of using a frame will be explained to the students. Its purpose in the two lessons is to ensure that the students observe the same amount of area each time they use the

frame, and thus guarantee that any difference in counts is because of a difference in items within the frame rather than in the size of the area sampled. I will give the example that if you count the number of people wearing pink shirts in a movie theatre and in Minute Maid Park, the difference in the count is easily attributed to the difference in the sample size (Minute Maid Park holds 50,000 people), rather than to the difference in people favoring pink. Thus, the sample frame is a tool to compensate for such area differences. A similar tool in the pink shirt count would be to divide the total count in each location by the total number of people in each location, thus producing comparable measurements of preference for pink.

These first two lesson plans are to support the seasonal inventories, so the students will get to repeat their efforts and thus gain some skill, which will translate into speed in subsequent use of the frames. The importance of reference marks and reference counts will be included as a calibration technique.

The third lesson is focused on the detailed identification of a single element in students' inventory. It develops recording techniques (sketches, written notations, simple measurements) that can be used in the field and then brought back to the office to identify the element. The focus in this lesson (repeated in the plan) is that the particular item does not need to be identified in advance, or even accurately, but it should be crudely identified for further study later. Thus, they may find a spider-like creature that has fewer than eight legs (and is therefore not a spider, but such a description is a necessary starting point). The research the students perform on their element will be the main tool for teaching them awareness about habitat elements and about what things live in which kinds of habitats.

Lesson One: Learning to Use Field Study Techniques

Overview

In order for students to venture outdoors to observe and explore nature, they need to learn basic techniques for studying and identifying plants and animals in our schoolyard and our surrounding area. This lesson will give students the opportunity to learn and practice observing through a frame while naming and recording everything they see inside that frame. When the time comes for the students to go outdoors, they will use a similar technique, identifying living and non-living things within a limited plot area.

Objectives

- The students will develop the abilities necessary for scientific inquiry.
- The students will use properties to identify, describe, or categorize materials and objects and will use characteristics to categorize living things.
- The students will learn to record all his/her observations.

Materials

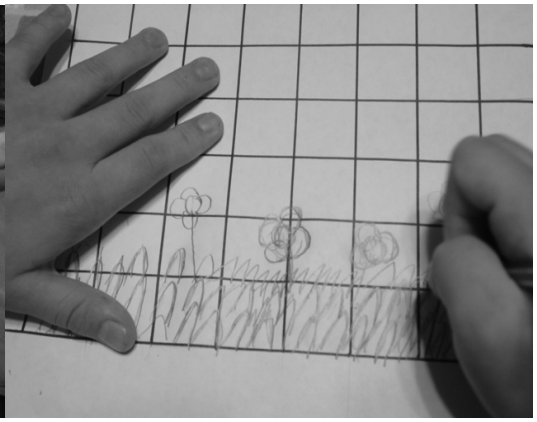
- Magazine cutouts (nature pictures)

- Glue, crayons, markers
- Schoolyard photos
- Construction paper, scissors
- Cardboard paper, pencil
- Picture frames data collection sheet

Procedure

1. Place all the materials necessary for this lesson in a working station.
2. Showing the frames, tell the students that they are going to learn how to frame an image as well as what to include inside the frame.
3. In groups of two to four, have the children make frames of various sizes by folding an 8.5 x 11-inch piece of paper, cardboard, or construction paper in half and cutting a small rectangular hole in the center. Students may decorate their frames if they choose to.


4. Students will place their different size frames on nature pictures as well as magazine cutouts. They will record all things observed inside of the frame and share them with a partner.

5. On a different day, students will again work with their frames, photographs, and magazine nature pictures. This time, they will observe inside of the frame; then, they will attempt to sketch their observations on a grid, counting and drawing the exact amount of plants or animals observed within the frame.

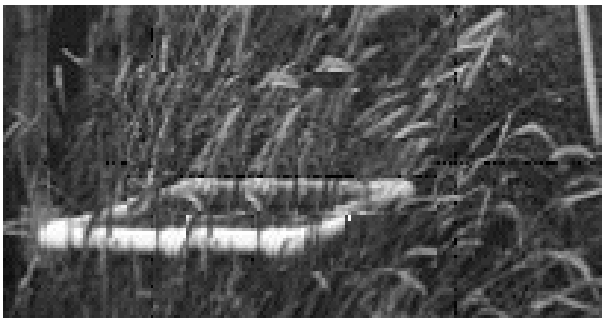
Once students feel comfortable with using their paper frames, explain to them what should be on the left side, where center is for the sketch, and what should be on the right side of the sketch. Students should label any known vegetation or objects. Depending on the size of the site, students can make several drawings or one panoramic sketch. Be sure to explain to students about labeling each sketch with the location, time, and weather conditions as if they were outdoors.

Lesson Two: Taking our Frame Outdoors

Overview

Once the students become familiar with observing, sketching on a grid, and counting, they can begin their outdoor activities using a larger frame.

Students will work in teams of three or four to complete a study of living and non-living things in our schoolyard. Students will be acquainted with a study design called plot study. A plot study is a square area (often 100 meters by 100 meters) that can be divided into subplots. Plot studies are useful for small areas. Our assigned area will be 10 square meters at a time.



Objectives

- Students will understand that a variety of plants and animals can be found in each habitat.
- They will learn that biodiversity is an important characteristic of a habitat.
- Students will become acquainted with a study design called plot study, which is used by ecologists.

Materials

- Field guides of different plants and animals
- Reference materials such as books, encyclopedias, web sites
- Computer with Internet access

- Meter sticks
- Tape measures
- Stakes
- String
- Clipboard with bull clip or butterfly clip
- Drawing paper
- Pencil on a string attached to the clipboard
- Hand lens on a string
- One copy of classroom activity sheet

Procedure

1. Before venturing outdoors, determine the location of the area to be observed. Prepare the students' clipboards and the other materials needed for their investigation beforehand.
2. Have students measure an area of 10 square meters using the meter stick, tape measure, string, and stakes to mark the area.
3. In teams, students will take turns tossing a 1-m^2 plastic pipe plot meter backward.
4. They will observe the living and non-living things found inside of the plot.
5. Students will count the things they find and sketch their observations in grid paper just as they practiced with a smaller frame. They will choose plots that do not touch or intersect.
6. Each team will work in different habitats if at all possible. This will provide the class with more data for comparison.
7. The teacher will record the information on an Excel spread sheet.
8. This lesson will take at least two or three class periods.
9. During the first period, students will be introduced to the activity. Measuring, counting, and identifying procedures will be taught and reviewed. During other periods, students will count and sketch their observations to the best of their ability. Depending on the environment chosen for study and seasonal variations, students may revisit their plot at various times throughout the school year.

Lesson Three: Identifying Their Findings

Overview

Students need to learn that scientists have developed different methods to find out as much as possible about a habitat as quickly as they can. When scientists have to make a rapid assessment, they go in specialized teams. When scientists have to go to an area to verify or learn, they go "ground-truthing." This process gives scientists a first-hand glance at the areas they want to see. The Backyard BioBlitz Educators Guide, downloadable from the Biodiversity Month Backyard BioBlitz website at <http://www.nrel.colostate.edu/projects/iboy/biomonth/backbioblitz.html>, provides great information on how to conduct a backyard observation.

Objectives
Students will research and identify the living and non-living things found in our back yard study using encyclopedias, field guides and the Internet. They will understand that a variety of plants and animals can be found in each habitat.

Materials
- Field guides of different plants and animals
- Reference materials such as books, encyclopedias, and web sites
- Computer with Internet access
- Paper
- Pencil
- Clipboard with bull clip or butterfly clip
- Drawing paper
- Pencil on a string attached to the clipboard
- Hand lens on a string
- Board to present findings

Procedure
In teams of four, students will research the different living and non-living things found in their field study. In this activity, they will have the opportunity to identify at least one living and non-living thing found in their plot. Students will go outside again to identify the different species. Spend a period introducing the students to the way scientists name and identify living things. For example, the domestic dog is *canis familiaris* and the domestic cat is *felis catus*. If students type these words into a search engine on the Internet, they will find valuable information. Let the children know that sometimes, especially when scientists do a rapid assessment, they may not know the name of a particular animal or plant. In a situation such as this, scientists can include the species in the rapid assessment, even though he or she doesn't know its name. The scientist will give it a temporary, or "morphospecies" name. For example, "Morphospecies one" might be a hard-to-identify, red-eyed insect and "Morphospecies two" might be an elusive, shiny-coated rodent or a silver-green plant. Scientists do sketches or take pictures of the living things found to further study them or to identify them later. Each part of the lesson is expected to take one or more periods to allow the students to do a more thorough job.

Inform the students that they will work in teams to investigate and identify at least one specimen. They have to decide, as a team, who will look for plants, insects or other animals in the square plot where they have previously been working.

Students gather the materials necessary for their observations and go outdoors to do their ground-truthing. While outdoors, students can make sketches and/or take pictures to help them identify their organism.

Indoors, students will share the information they have collected with their teams and will use their field guides, encyclopedias, books, and Internet sources to learn more about their specimen.

Each team will prepare posters with the information found to present to the rest of the class. The teams will be expected to have either a common name for the specimen found or a morphospecies name and information about their specimen's habitat. The teams will at that point share the pictures and/or sketches done during their ground-truthing. Ultimately, all of their work will be displayed for the students to compare their findings with those of the other teams and draw conclusions as to why or why not a specimen is in certain areas of our backyard.

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Campbell, A. Neil and Jane B. Reece. *Biology*. San Francisco, CA: Benjamin Cummings Publications, 2002.
Contains an ecology unit that explains, in detail, several categories of ecology, including: population ecology, community ecology, ecosystems, etc.

Science Curriculum and Activity Guides, Second Grade. 2001. California Academy of Sciences. 1 May 2004. <http://www.calacademy.org/research/library/biodiv/curriculum/two.htm>.
A website that allows science teachers to explore essentially all that is available in terms of teacher resources for science at all levels, complete with full citations and helpful descriptions of each work.

Supplemental Resources

Animals in our Backyard. 2004. Mrs. Fitzgerald's 1998-1999 Second Grade Class. 1 May 2004. <http://www2.lhric.org/pocantico/trail/trail.htm>
This site was made by second graders. The children mapped a trail behind their school, researched the animals they saw on the trail, and then wrote about each animal. They created a digital illustration to accompany their writing and put it together to create a website.

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The Science Book of Things That Grow explains aspects of plant and fungal growth, such as their development in "cuttings, greenhouses, yeasts, and molds" (*Science Curriculum*).

Biodiversity: It Takes All Kinds to Make a World. 1998. The American Museum of Natural History. 1 May 2004. <http://www.amnh.org/nationalcenter/it_takes_all_kinds/>.
This site gives teachers and students alike an opportunity to discover what the natural world has to offer.

A Child's Place in the Environment. Sacramento, CA: Enterprise Printing, 1994.
This six-volume set attempts to foster a sense of environmental awareness literacy in young students.

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This text provides educators with classroom lessons and instructional approaches that develop a basic understanding of the environment (*Science Curriculum*).

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Clearly explains all of the issues that go along with the presentation of scientific material in verbal or written form.

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A compilation of essays by the NAEE (North American Association for Environmental Education) to stress the importance of environmental education during early childhood (*Science Curriculum*).

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One hundred fifty-six natural world activities intended to help educators inspire children to love nature, while children develop skills to understand growth in urban, rural and suburban settings (*Science Curriculum*).

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This binder describes the process behind creating a garden at school, explaining how to secure funding, choose a spot, it suggests garden activities, and includes environmental lessons (*Science Curriculum*).

Research and Management Techniques for Wildlife and Habitats. Ed. T.A. Bookhout. Bethesda, MD: The Wildlife Society, 1994.
A book that is useful to both amateurs and professionals in the wildlife arena, *Techniques* draws from the knowledge and experiences of numerous authors.

Ruskey, Abby. *Promoting Environmental Education: An Action Handbook for Strengthening EE in Your State and Community*. Stevens Point, WI: U of Wisconsin-Stevens Point Foundation Press, 1994.
This guide introduces US ideals for a K-12 environmental education and the education that currently exists. It then provides ideas on how to achieve those ideals in environmental education (*Science Curriculum*).

Texas Parks & Wildlife. 2004. Texas Parks and Wildlife Department. 1 May 2004. <http://www.tpwd.state.tx.us/>.
This site provides a Tool Kit with multidisciplinary wildlife teaching activities as well as a wealth of information that even children can look up.

What is a BioBlitz? 2004. Texas Parks and Wildlife Department. 1 May 2004. <http://www.tpwd.state.tx.us/expltx/jrnat/bioblitz.htm>.
A competition in which naturalists try to find as many species of animals and plants as possible. A "Kids' Urban BioBlitz" also exists and is specifically for children in urban areas; however anyone is welcome to participate.

Windows on the Wild. 2004. World Wildlife Fund. 1 May 2004. <http://www.worldwildlife.org/windows/windows.cfm>.
This site, according to its creators, is designed to inform people about issues surrounding biodiversity and encourage people to think critically, discuss important issues, and make wise decisions regarding the environment.