

A Program For Outdoor School Education

A comprehensive curriculum for grades 1-6.

Written by Dana Waterman

In collaboration with:

Trudy Wright - Education Superintendent
Northern New England Conference





When you walk through woods I want you
to see

The floating gold of a bumble bee.
Rivers of sunlight, pools of shade,
Toadstools sleeping in mossy jade.
A cobweb net with a catch of dew,
Treetops cones against the blue,
Dancing flowers, bright green flies,
And birds to put rainbows in your eyes



When you walk through woods I want you
to hear

A million sounds in your little ear,
The scratch and rattle of wind-tossed trees,
A rush, a timid chipmunk flees.
The cry of a hawk from the distant sky,
The purr of leaves when a breeze rolls by,
Brooks that mumble, stones that ring,
And birds to teach your heart to sing.



When you walk through the woods I want you
to feel

That no mere man could make this real...
Could paint the throb of a butterfly's wings,
Could teach a woodchuck how to sing,
Could give the wonders of earth and sky;
There's something greater than you or I.
When you walk through the woods and the
birches nod,



So, meet a friend of mine named *GOD*.
Sgt. Leighton G. Harris



Table of Contents

**Note: The half page format was designed to allow for printing and binding document as a field guide size. To print, select “two to a page” under your printers options.*

Introduction3

Rational.....6

Aim and Target Learners12

Context13

Program Design14

Major Goals15

Attitudes and Values16

Skills17

Special Considerations19

Lesson Design20

Guidelines For A Naturalist22



Nature Study Lesson Plans

Meadows/Fields23

Marsh/Wetlands49

Forest/Woodlands77

Lakes/Ponds102

Appendix.....134

 Teaching Strategies135

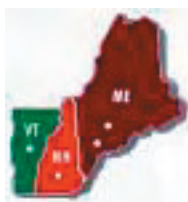
 Your Role As Coach (how to ask the right questions)..140

 Making It Work For You141



Introduction

The conception of this project began about four years ago when I was teaching the fifth and sixth grades at a school in the Northern New England Conference. The Superintendent, Trudy Wright had a vision for developing an outdoor school for all grades in our conference and, under her guidance, outdoor school has grown and developed into an outstanding quality program.



The Northern New England Conference governs the churches and schools within the states of Maine, New Hampshire and Vermont. Within the Conference, there are approximately 13 schools, 350 students, and 35 teachers spread out among these three states. Most of the schools are small in size, ranging from one-room one-teacher schools, to three-room three-teacher schools. Most schools operate a grades 1-8 program, however some schools have begun to add kindergarten and ninth grade programs. Two schools within the conference offer a K-12 program.

Setting

Once a year, during the month of September, the schools in NNEC have the opportunity to participate in a three-day, three-night outdoor school. This outdoor school is held at Camp Lawroweld, a summer camp



owned and operated by our conference in Weld, Maine, near Mt. Blue State Park. The camp is situated on 225 acres of land, and borders Webb Lake which is about five miles long. This pristine lake is nestled among eight surrounding mountain peaks. The land supports a variety of habitats including woodlands, forested fresh water wetland, marsh, fields, and a lake.





The campground itself is situated along 900 feet of waterfront, its central focal point being a massive hunting lodge built in 1930 from huge maple logs and stone. The nine cabins and several outbuildings make it possible to comfortably house approximately 100 people at one time.

Program

Outdoor school is a fairly recent addition to the program of the Northern New England Conference Department of Education, having only been formally organized through the Superintendent's office beginning in the fall of 1999. Previous

Purpose:

- Develop friendships between small schools***
- Learn about God through experiencing nature, and***
- Create a desire for lifelong outdoor learning.***

to this, two or three of the small church schools would get together and spend several days at the camp with their students. Over time, more schools became interested in participating and asked to join in. As the number of participants grew, so did the need to have a formally organized program in order to ensure the safety of the

participants, provide quality programming, and keep costs at a minimum. According to the Superintendent, the purpose of



organizing this outdoor school is to help develop a connection between the small schools of our conference so that they can develop friendships with in the larger Adventist community, learn about God through experiencing nature, and create a desire for lifelong outdoor learning. Hopefully, students and teachers will be exposed to new kinds of activities and ideas which they can take back with them and continue to use in their own school settings.



Operating a three day outdoor experience is not a small undertaking. In the fall 2004 program, 11 schools participated bringing a total of 150 students. In order to accommodate this number of students, the outdoor school has been set up so that the program for grades one through six, approximately 100 students, is run at Camp Lawroweld by six or seven teachers along with parent chaperones/volunteers. Students in grades seven and eight have a choice of four adventure programs run at auxiliary sites: a canoeing and camping trip, backpacking and hiking, rock climbing, and a wilderness survival course. The programs at these auxiliary sites are not addressed in this curriculum.

Personal Connection to the Program

As a fifth and sixth grade teacher with a degree in the natural sciences, my role in the outdoor school has been to help teach in the grades one through six nature studies program. The outdoor



school program is divided into three main focus areas (see graphic insert). Although the Superintendent had provided some general guidance, initially there were no clearly defined goals to structure the content and presentation of the nature studies program. The content taught and method of delivery varied from year-to-year depending on who was willing



to teach, how much time they had to prepare, and how comfortable they were with taking students out into nature. Consequently, the nature studies program was somewhat disjointed and much of what was experienced by students was similar to what they might have experienced at school, only in a more rustic and picturesque setting.

Clearly there was a need for a program that would provide an opportunity for kids to get out and explore nature.

I also observed that these lessons were mostly conducted in the buildings of the Camp, on the lodge porch, or under a tree. Perhaps there might be a short five- or ten-minute foray around the lawn or into a wooded area close by. Certainly, the lessons were not getting students

out into nature, let alone exploring it. Clearly there was a need to develop a curriculum for the nature studies program that would provide teachers with the instructional materials they needed to lead students in an exploration of the surrounding habitats.

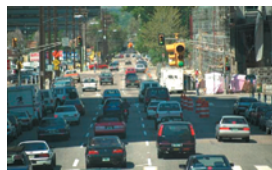
So, in a discussion with the Superintendent, I shared my desire to develop a curriculum for the nature studies program. Since she also had a burden to see this area of the program improved, she was happy to work with me in the development of a nature studies program. So this project has been a collaborative effort, as over the last four years I wrote, piloted, and with the help of the wonderful teachers in this conference, implemented the curriculum and program outlined in the following document.

Although this program was originally designed for the Northern New England Conference it will work for you too! Because at its heart it is really about teaching kids to explore the world God has created for us. In addition to all the traditional components of a curriculum, you will also find detailed lesson plans, teacher educational, informational, and training materials - as well as a tool to help you plan your own outdoor school program. Whether you are starting from scratch or simply looking to improve your existing program, I hope that these materials will inspire you to get out and explore God's world.



Rationale

How often in the hustle and bustle of our everyday lives do we stop to see, hear, and feel the natural world around us? More than likely, not very often. Most of our days are spent in constant motion from one appointment or duty to the next, never quite catching up with ourselves. When we do crash, we are happy to do so with mind numbing apathy in front of our televisions, too tired to even care what we see. Our children are caught in the chaos of our lives as well, kept occupied with high-tech toys, TV, videos, and computer games. There is little time for play in the natural world or interaction with things in it.



Pearce (as cited in Wilson, 1997) suggests that “interaction with the physical substance of the living earth (e.g. rocks, trees, wind) is critical to the child’s developing brain and intelligence”(p.7). Sadly, most children have little opportunity for this type of interaction. Because kids often have little exposure to nature they have a limited understanding of the natural world and how to enjoy it. In short, kids need to be shown that they can have fun away from the television or computer screen. Not surprisingly, when kids do have the chance, they often experience a deep sense of wonderment. Webster (1997) writes, “Very few things capture one’s imagination quicker than finding a fossil while on a nature walk or even a walk through a museum. There is an almost mystical drawing power associated with fossils.



Questions of What? Where? When? Why? and How? immediately flood one’s mind, and in some cases may remain there forever, as the relic from the past is contemplated” (Webster, 1997, p.4). The things of nature have a way of

capturing our attention, inviting us to investigate, to find out more.

In addition, studying nature also increases student's self-, social-, and spiritual-awareness and has been shown to enhance cognitive development.

Interactions in and with the natural world, beginning at a young age, can help children begin to form a healthy sense of self. The Seventh-day Adventist institutions of education have



purposed to help their students develop their character and a value system that will prepare them not only to live meaningful lives on this earth but for Eternity as well.

Outdoor education also provides occasion for the building of relationships.

An Outdoor School provides an opportunity for the students of different ethnic, socio-economic, and religious backgrounds that make up the schools, to come together and get to know each other while participating in the outdoor education program. Outdoor school is one way to begin helping students understand that they are part of a greater community; their small school is connected to other small schools with in their conference and their conference is connected to other conferences throughout the United States and around the world. Many cultures, ethnic groups, people of all ages throughout the world connected by common beliefs and a faith in Jesus Christ.

The exploration of nature enhances cognitive growth and development. This aspect of outdoor education was discussed in a forum at the Roger Tory Peterson Institute of Natural History (1990)"...[N]ature



provides a rich source of experience upon which children depend in order to grow intellectually. It provides the hands-on experiences children need to involve themselves in learning about ancillary topics, cause and effect, transitions and interactions with people and with other things. Early learning experiences are

all-important because they provide the foundations for intellectual development and future success as a learner (p.4).” An outdoor education program that provides opportunities for students to study nature, in a way that helps them move from concrete to abstract reasoning, enables students to develop higher order thinking skills, strengthens their cognitive development and lays a foundation for future learning.



For a Christian, exploration and interaction with nature provides opportunity to renew the soul and connect with the Creator of the universe who has promised that “Since the creation of the world God’s invisible qualities-His eternal power and divine nature-have been clearly seen, being understood from what has been made, so that men are without excuse” (Romans 1:20). White (1903) in the book *Education* wrote that the study of nature is a means of understanding the Creator and a vehicle for developing young children into lifelong learners. “To those who learn thus to interpret its teachings, all nature becomes illuminated; the world is a lesson book, life a school... To a little child, nature presents an unfailing source of information and delight... So far as possible, children from their earliest years should be placed where this lesson book is open before them. Let them look at the glorious scenes painted by the great Master Artist on the shifting canvas of the heavens; let them become acquainted with the wonders of earth and sea; let them watch the unfolding mysteries of the changing seasons and in all His works learn of the Creator” (White, 1903, p.60).



This idea that nature is God’s classroom is not a new one. In fact, it was part of God’s creation plan when He established a beautiful natural home in the Garden of Eden for Adam and Eve - a home which they were to take care of and nurture, a place

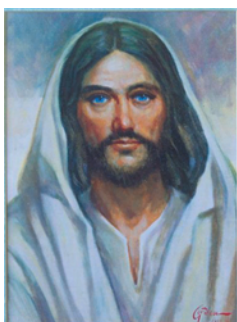
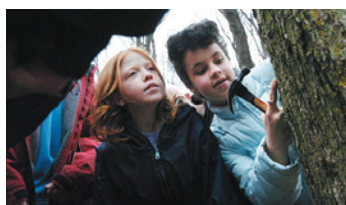
in which they could continually learn and grow, and to which God would come to them in person and walk and talk with them teaching them his lessons. “In their original perfection all created



things were an expression of the thought of God. To Adam and Eve in their Eden home, nature was full of the knowledge of God, teeming with divine instruction. Wisdom spoke to the eye and was received into the heart; for they communed with God in

His created works” (White, 1900, p.18). And even though Adam and Eve sinned and in so doing brought death and dying, marring God’s original and perfect classroom, it is still there to speak to us, to teach us who God is. “The heavens declare the glory of God and the skies show His handiwork. Day after day they speak to us, and night after night they reveal God’s wisdom. There is no speech, there are no words, and there is no sound, yet their voice is heard everywhere, and their words reach the ends of the earth” (Psalm 19:1-4).

Jesus, the Great Teacher, taught his lessons to the multitudes and His followers using the familiar objects of their surroundings, objects that when looked upon again would bring back to their minds the lessons taught by Him.



“In this way He associated natural things with spiritual, linking the things of nature and the life experiences of His hearers with the sublime truths of the written word. And whenever afterward their eyes rested on the objects with which He has associated eternal truth, His lessons were repeated” (White, 1913, p.140).

Today we know these principles still hold true for us as teachers in Christian schools. We have the

privilege and opportunity not only to help students discover and explore nature, but to do so in a way that connects the lessons of the natural world to spiritual principles.

It is for these purposes that the Northern New England Conference (NNEC) of Seventh-Day Adventists, has endeavored to develop an annual outdoor education program that will provide students not only an opportunity to learn about nature, but to interact with their Creator in nature.

References

Roger Tory Peterson Institute of Natural History Forum. (1990). Bridging Early Childhood and Nature Education. Jamestown, NY: Roger Tory Peterson Institute of Natural History. (ERIC Document Reproduction No. 330 527).

Webster, C. (1997). Foreword. Origins, 24(1), 4.

White, E. (1900). Christ's object lessons. Mountain View, CA: Pacific Press Publishing Association.

White, E. (1903). Education. Nampa, Idaho: Pacific Press Publishing Association.

White, E. (1913). Counsels to parents, teachers and students regarding Christian education. Mountain View, CA: Pacific Press Publishing Association.

Wilson, R. (1997). The wonders of nature: Honoring children's ways of knowing. Early Childhood News, 9(2), 6-9, 16-19.



Aim

Recognizing that kids benefit not only intellectually and physically from experiencing the natural world, but spiritually as well, the Outdoor School Education Curriculum hopes to engage students in interaction with the natural world, so that they might gain a deeper knowledge and understanding of God's Creation and by doing so seek to know the Creator more deeply.



Target Learners

This curriculum is intended for students in grades three through six, however the explorations provided could accomodate grades seven and eight as well. The Northern New England Conference however, has developed a program for grades seven and eight which builds on the three to six curriculum and provides more intensive adventure experiences (See Context for further explanation of the set-up for the Northern New England Outdoor School).



Context

Camp Lawroweld Boundary & Trail Map



Once a year, during the month of September, the schools in NNEC have the opportunity to participate in a three-day, two-night outdoor school. This outdoor school is held at Camp Lawroweld, a summer camp owned and operated by our conference in Weld, Maine, near Mt. Blue State Park. The camp is situated on 225 acres of land, and borders Webb Lake which is about five miles long. This pristine lake is nestled among eight surrounding mountain peaks. The land supports a variety of habitats including woodlands, forested fresh water wetlands, fields, and lake.

The campground is situated along 900 feet of waterfront, its central focal point being a massive hunting lodge built in 1930 from huge maple logs and stone. The nine cabins and several outbuildings make it possible to comfortably house approximately 100 people at one time. At this point the camp has not been winterized.



On average, about 150 students participate each year. In order to accommodate this number of students, the outdoor school has been set up so that the program for grades one through six, approximately 100 students, is held at Camp Lawroweld. Students in grades seven and eight have a choice of adventure programs at auxiliary sites: a canoeing and camping trip, an Appalachian backpacking and hiking trip, a rock climbing expedition, a biking expedition, and a wilderness survival course. The programs at these auxiliary sites are planned so that the students will be actively engaged and participating in activities at all times.



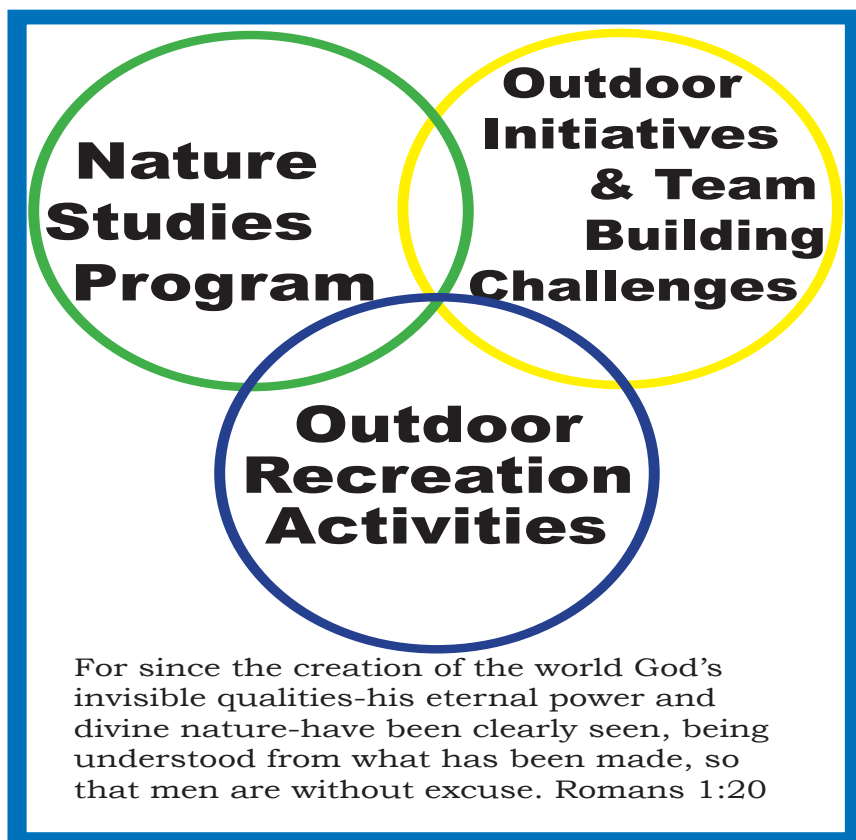
Program Design

The outdoor school program focuses on three specific areas.

The Nature Studies Program: Consists of two sessions each two and a half hours long. During these sessions students are engaged in the exploration of a particular habitat.

The Outdoor Recreational Activities: Each day, during a three hour block of time, students rotate through four recreational activities, e.g., boating, swimming, basketball, hiking, etc...

The Outdoor Initiatives and Team Building Challenges: Students are divided into teams and led through two challenges in which they must work together as a team to complete, e.g. ropes course, rock climbing wall, blind maze, log relays, etc...



Major Goals

Through participation in the Nature Studies Program of Outdoor School students will:

1. Engage in exploration of nature.
2. Acquire a knowledge of nature.
3. Learn and use scientific methods and practices.
4. Develop an appreciation for the natural world.
5. Witness the character of God through the study of nature.
6. Become good stewards of the environment.
7. Have fun in the outdoors.
8. Develop new friendships.



Attitudes and Values

Attitudes and values refer to how people feel and what they believe to be worthwhile. Values are the predominant views individuals have-the major guiding forces in their lives. An awareness of values leads to greater consistency among values, decisions, and action. This curriculum is concerned with the clarification of attitudes and values related to the following.

Spiritual Values Spiritual values are taught as students acknowledge God as Creator and Sustainer of all living things and originator of all scientific principles.

Self-concept Seventh-day Adventists believe that a healthy self-concept begins with the value God placed on man to give his Son for their redemption. A healthy self-concept, including the feeling of individual worth and the desire to improve oneself through continued learning, is fundamental to the happiness and success of individuals and society.

Social responsibility Concern and respect for others, for both present and future generations, is essential for the well-being of both individuals and society. Christians believe they have a social responsibility to teach others about God's redeeming love for man that can bring eternal joy.

Environmental ethic Stewardship of the earth reflects a respect for the delicate ecological balance of the natural environment and concern about the effects of human activities on it.

Scientific curiosity A strong desire to know and understand oneself, others and the environment is a key motivating force behind scientific study.



Skills

The important skills in nature education are those physical actions necessary to successfully carry out the process of discovery and investigation, evaluation and problem identification and problem solving.

Becoming a Naturalist In 1908, naturalist Anna Bosford



Comstock wrote: “Nature-study is, despite all discussions and perversions, a study of nature; it consists of simple, truthful observations that may, like beads on a string, finally be threaded upon the understanding and thus held together as a logical and harmonious whole. Therefore, the object of the nature-study teacher should be

to cultivate in the children powers of accurate observation and to build up within them, understanding” (as cited in Link, 1981, p.10). Simply put, students should be taught how to study nature like a naturalist.

Nature educator L. Conrad (1972) specifies the following steps to outdoor learning as observation, reflection and investigation.

Observation First one must learn to see what is going on around them. The key to this process is alertness, the discipline of noticing everything; this includes



what can be seen, smelled, felt, heard and even tasted. This practice puts students in direct contact with things to be learned, and fills their minds with an array of rich impressions on which to think. This noticing naturally leads the student to the second step, reflection.



Reflection Conrad (1972, p.18) explains, reflection involves “thinking about what you have seen and heard; wondering about it; turning it over and over in your mind; bringing to bear upon it all that you have previously known and thought about that thing and about other things parallel with it.” This kind of reflection usually gives rise to questions that bear investigation.



Investigation Some may call this step the research process. In outdoor education this process begins by looking at the object in question in the environment and within the context with which it is found. It means one makes and revises guesses and looks for clues that might support each guess. It involves talking with other people who have seen the same things, looking in books and written materials, and persistently asking the question, “Why?”



Unlocking nature’s mysteries With these three tools, students can delve into unlocking the innumerable mysteries of the natural world, experiencing the thrill of discovery and the satisfaction that comes from a patient and vigilant pursuit of understanding. Then, teachers, freed from the fear of not knowing it all, can participate with their students in the quest. As the Swiss philosopher, Amiel aptly stated, “The highest function of the teacher consists not so much in imparting knowledge as in stimulating the pupil in its love and pursuit. To know how to suggest is the art of teaching” (as cited in Link, 1981, p.9).



Nature Study Lessons

Special Considerations

LESSON DESIGN

Design: Lessons have been designed for the following four major habitats: meadows/fields, marsh/wetlands, forests/woodlands, lakes/ponds. Each lesson is designed to follow the Flow Learning™ model developed by Joseph Cornell (see Lesson Design for further explanation).

Grouping: In our conference we have found that it works best to have each grade work in one specific habitat so that by the time they have completed the sixth grade they would have had a chance to explore all four habitats.

Size: Depending on the number of students attending, there may be more than one group per habitat. (I have found that a group of ten is probably the best size.) If that is the case, it is helpful to plan ahead of time where each group will go so as to allow each group plenty of space to explore.

Safety: Before heading out, each group should be given specific safety instructions (see Guidelines for a Naturalist). Each group should have a minimum of two adults, in the event that a student for some reason must return to camp, there will be someone to escort them. Also, the group leader's backpack should contain a basic first aid kit as well as a whistle and flare.

Leader Backpack: Each group leader should have a backpack which contains some basic fieldguides pertinent to their habitat, the specific materials needed for each sessions explorations (see "What To Pack" for each habitat), and safety equipment.

Student Packs: It is not necessary for each student to have a backpack, but it would be good for students to take a waterbottle, field notebook, and pencil.



Lesson Design



The lessons designed for this nature studies curriculum are based on Joseph Cornell's, Flow Learning™ model, some of which have been adapted from his *Sharing Nature with Children* (1998). Flow Learning™ is a natural, flexible method of teaching which takes young people through a set of experiences designed to move from action to awareness to reflection. The nature studies component of outdoor school is comprised of two sessions. Each session consists of a large block of time (See attached schedule in Appendix) which allows teachers to take students through the four stages of the Flow Learning™ method. Flow Learning™ has four stages which flow into one another:

Awaken Enthusiasm ♦ Focus Attention ♦ Direct Experience ♦ Share Inspiration

Stage One: Awaken Enthusiasm
(playfulness, alertness, high energy)

- Builds on child's love of play
- Creates an atmosphere of enthusiasm
- A dynamic beginning gets everyone saying yes!
- Develops full alertness, overcomes passivity
- Creates involvement
- Gets attention (minimizes discipline problems)
- Develops rapport with the leader
- Creates good group dynamics
- Provides direction and structure
- Prepares for later, more sensitive activities



LESSON DESIGN



Stage Two: Focus Attention

(receptive, aware, observing, taste , feel, touch)



- Increases attention span
- Deepens awareness by focusing attention
- Positively channels enthusiasm generated in Stage One
- Develops observational skills
- Calms the mind
- Develops receptivity for more sensitive nature experiences



Stage Three: Direct Experience

(absorbed, curious working, sorting, doing, discovering, experimenting)

- People learn best by personal discovery
- Gives direct, experiential, intuitive understanding
- Fosters wonder, empathy and love
- Develops personal commitment to ecological ideals

Stage Four: Share Inspiration

(listening, reflection, thoughtful, bonding, feedback)



- Clarifies and strengthens personal experiences
- Builds on up-lifted mood
- Introduces inspiring role models
- Gives peer reinforcement
- Creates group bonding
- Provides feedback for the leader
- Leader can share inspiration with a receptive audience

Guidelines for a Naturalist



1. Always stick with your partner. Don't stray out of earshot of your group. Tell your leader where you will be exploring.

2. Respect Nature. Leave everything the way you found it. Don't trample plants, break branches, move fallen logs, or leave litter behind. If you do look under a rock, or fallen log remember that it is probably home to little animals and plants. So, be courteous and put the roof back on!
3. In the wild, you can take a few sample leaves, flowers, fruits or seeds without doing harm, being careful not to pull up the root. In a park or arboretum, take samples only if they are lying on the ground.
4. Never taste a plant, fruit, or nut unless someone (Preferably an adult) has confirmed that it is safe.
5. Some insects sting. Never touch or pick up an insect unless you know what it is. Pick insects up gently. You can get an insect to crawl onto a leaf or a twig without touching it. Always put insects back where you found them.
6. If you put an insect or small animal in a container make sure there are airholes. Keep them only a short while and then release them back where you found them.
7. Share your discoveries with others.



MEADOWS & FIELDS



MEADOW/FIELDS

Session One 3 hours

Introductions: 15 min.

Stage 1: Webbing 15 min

Stage 2: Duplication 30 mins.

Stage 3: Treasure Hunt 90 mins.

Stage 4: Share 30 mins.

Session Two 3 hours

Stage 1: Identification 20 min

Stage 2: Animals 20 mins.

Stage 3: Treasure Hunt 90 mins.

Stage 4: Share 45 mins.



What To Pack



General Supplies:

- Field Guides
- Bible
- Hand lenses
- Bug boxes
- Butterfly nets
- Rulers
- colored pencil packs (several small boxes)
- tape
- First aid kit
- Whistle

Lesson Supplies:

- Ball of string
- Two hankchiefs
- Photocopies of:
 - Treasure hunts
 - Animal picture cards
 - Exploration poem model
 - Group poem composition form
 - Strips of paper



Student Supplies:

- water
- small notebook
- pencil

Introductions

Time: 15 mins.

Materials: Ball of String



Step 1: Have children form a circle.
(Big enough that they will have to toss the ball of string to get it to another person.)

Step 2: Leader stands inside circle, near edge with ball of string.

Say: *Since we will be spending some time exploring this field habitat together I would like for us to take a few minutes to get acquainted with each other and to discover how we are all connected. To begin I would like each of you to introduce yourself by telling us your name and the school you attend.*

Start by introducing yourself and then tossing the ball of string to a student.

Once everyone has introduced themselves and they are all holding a section of the string, Say: *You can see that we are all connected together right now physically by this string. But we are also connected because we all attend schools that are part of the (-----) Conference and participate in outdoor school. I imagine there are many other ways in which we are connected. But before we can discover these we need to unravel ourselves.*



Have students reverse the process. The last person holding the ball of string should toss it back to the person who threw it to them, stating their name and the school which they attend.

MEADOW/FIELDS



Step 3: To help students discover some other ways in which they are connected, ask them to think of something about themselves they would like to share with the group. Perhaps, they enjoyed learning how to waterski this summer. Once a student has shared, then ask the other students if anyone else in the group can connect with that interest. For instance, someone else may have enjoyed water skiing also over summer, or some other form of water play activity. then throw the string to that person. who receives the ball of string would something about themselves and toss it who is able to identify a connection. all students are connected by student has difficulty identifying example no one else in the group this summer, help students *“Did anyone participate in activities this summer?”* If share something else about



They would
The person
then share
to someone else
Continue, until
the string. If a
a connection, for
learned to waterski
generalize by saying,
any kind of water sport
necessary, ask the student to
themselves.

Step 4: Close by saying,
*many more ways in
interact with each*

*“I hope everyone will discover
which we are connected as we
other over the next few days.”*

Remind students that we are all
connected through Jesus.



Step 5: Transition into the Stage 1
Activity by explaining to students that we
are going to use this same idea to discover how
organisms in the field habitat which we will be
exploring are connected to each other.



Stage 1: Awaken Enthusiasm

Activity: *Webbing

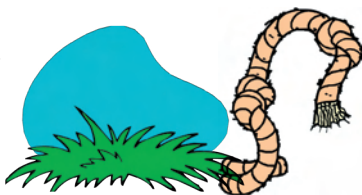
Time: 15 mins.

Materials: Ball of String



Here is a game that will make clear the interrelationship among all the members of your field habitat. This webbing activity vividly portrays how air, rocks, plants and animals function together in a balanced web of life.

Step 1: Have children form a circle. The leader stands inside the circle near the edge, with a ball of string: *“Who can name a plant that grows in this area?... Grass...Good. Here, Miss Grass, you hold the end of the string. Is there an animal living around here that might eat the Grass?...Rabbits?...Ah, a sumptuous meal. Mr. Rabbit, you take hold of the string here; you are connected to Miss Grass by your dependence on her green blades for your lunch. Now, who needs Mr. Rabbit for his lunch?”*



Step 2: Continue connecting the children with string as their relationships to the rest of the group emerge. Bring in new elements and considerations, such as other animals, soil, water, and so on, until the entire circle of children is strung together in a symbol of the web of life. You have created your own ecosystem.



Step 3: To demonstrate how each individual is important to the whole community, take away by some plausible means one member of the web. For example, a fire burns the grass or pesticides kill the insects. The person on the other end of the

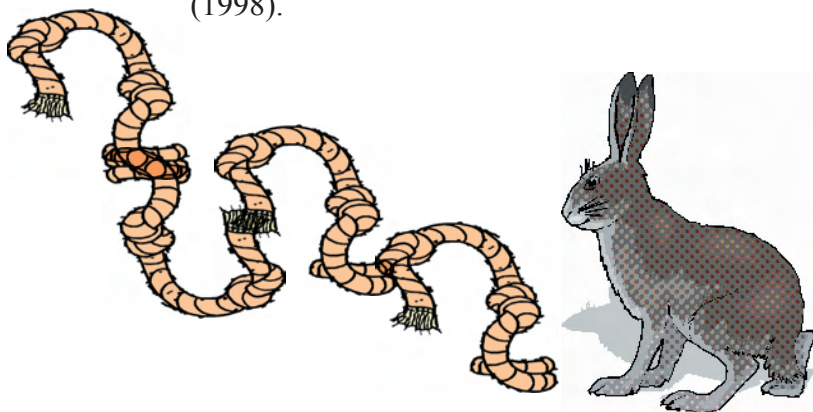
MEADOW/FIELDS



grass string should then give a tug and so on. The process continues until every individual is shown to be affected by the destruction of the grass.

Step 4: Discuss with students the importance of being respectful of the field habitat as they explore. Say, “*It is important to remember we are entering someone else’s home and what we do there will affect the inhabitants.*” Solicit ideas from the students as to how they should conduct themselves in a respectful way in the field. (See Guidelines for a Naturalist).

*adapted from Joseph Cornell’s *Sharing Nature with Children* (1998).



Notes

Stage 2: Focus Attention

Activity: Duplication

Time: 30 mins.

Materials: Two Handkerchiefs
10 natural objects



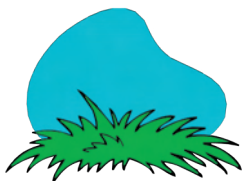
Before beginning today's session, secretly gather from the area in which you will be exploring about ten common natural objects, such as rocks, seeds, conifer cones, plant parts, and some signs of animal activity. Lay the objects out on a handkerchief and cover them with another handkerchief.

Step 1: Call students close around you and tell them,
"Under this cloth are ten natural objects that you'll be able to find nearby. I will lift the handkerchief for 25 seconds so you can take a good look and try to remember everything you see."



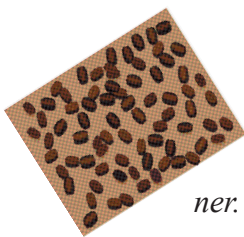
Step 2: After looking at the objects, the students spread out and collect identical items, keeping their findings to themselves. After five minutes of searching, call them back. Dramatically pull the objects from under the handkerchief, one at a time, telling interesting stories or tidbits about each one. (If you do not have the background knowledge for this part, simply ask students to share what they know about each item and/or ask them to generate questions about it.) As each object is presented, ask students if they found one just like it.





Step 3: Children have a lively curiosity about the kinds of things you'll show them - rocks, seeds, plants, and so on. When you repeat the game several times, it has a noticeable strengthening effect on the child's concentration and memory.

Extension: Have each student go and find a natural object to put under the handkerchief. Make sure that no one sees another person's object. Then do the above activity again using the objects collected by the students. Asking each student why they chose a particular object.



Step 4: Transition into Stage 3 Activity by saying: *"During our next activity, you will be making even more interesting discoveries as you explore this field habitat with a partner."*

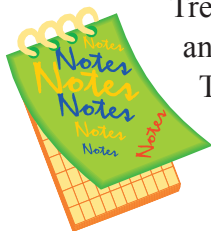
Stage 3: Direct Experience

Activity: Flora Treasure Hunt

Time: 90 minutes

Materials: copies of Treasure Hunt for
23 each student

- field notebook
- field guides
- rulers
- hand lenses
- colored pencils



Treasure hunts are familiar to almost every child and provide a sense of excitement and discovery.

This treasure hunt is designed to help students take a closer look at the flora that can be found in their field habitat.



Step 1: Explain to students they are about to participate in a special kind of treasure hunt. This treasure hunt will give them the opportunity to find out interesting things about the flora (plant life) that inhabits the field. Say:

"You will be working in pairs and each pair will need to have a set of colored pencils, hand lense, scissors, tape, and two notebooks. For each item listed on your flora treasure hunt list you must show "proof" of finding. Either, sketch a picture or diagram, or collect a sample. You will use your journal to keep a record."



Remind students of the guidelines for collecting items. Explain that in some cases they will be asked to identify certain objects and that they may use the field

MEADOW/ FIELDS

guides in the backpack provided for your group. Let students know they do not have to complete the treasure hunt in the order listed, but they should make sure each entry in their journal is clearly numbered and labeled.



Students may not have time to find all the items listed, that is OK. as long as they are engaged and interested in exploring the field. Make sure students understand they are to work with their partner, but not with other pairs.



Step 2: Establish the boundaries for the treasure hunt and a signal that will be used to bring everyone back to the meeting area. Circulate among the pairs assisting their discovery by questioning. (See Appendix for specific questioning strategies.)

Step 3: About 35 minutes before your nature study time is over call everyone back together. Ask students to share their most interesting discovery and why they found it interesting. Transition into Stage 4 Activity by saying: *Because all things in the natural world were created by God they give us a little glimpse of who God is, His character and personality and divine qualities.*

Notes

Flora Treasure Hunt

1. **Shapes:** Find leaves with smooth edges, edges with tiny teeth, deeply cut edges.
2. **Color:** Find plants with at least one shade of red, pink, orange, brown, yellow, white, purple. Find five shades of green.
3. **Texture:** Find things that are soft, fluffy, hairy, prickly, smooth, bumpy.
4. **Size:** -Find a plant as tall as your waist, knee, ankle.
-Find a leaf as wide as your foot, as long as your little finger.
-Find the widest, skinniest, longest, shortest, grassleaf.
-Find a flower that is as big as your fist, so small you can cover it with the end of your finger.
-Find a flower that has three petals, more than three petals.
5. **Symmetry:** -Find two flowers that have a radial (regular) symmetry.
-Find two flowers that have bilateral (irregular) symmetry. Use your field guide to identify these flowers.
6. **Patterns:** -Find three plants that have different leaf arrangements. Identify each type of leaf arrangement.
-Find a plant with many flowers on one stalk
- Find a plant with a single flower on one stalk.
7. **Smell:** Find a flower that smells sweet. Find a flower that has no smell.
8. **Find** a flower where the pistils and the stamen are easy to see, hard to see.
-Find a piece of grass with seeds, without seeds.
9. **Choose** two types of flowers, and two types of grasses and use your field guide to identify them.



Stage 4: Share Inspiration

Activity: Understanding what we don't see.

Time: 30 Minutes

Materials: Bible



“There are things about God that people cannot see - his eternal power and all the things that make him God. But since the beginning of the world those things have been easy to understand. They are made clear by what God has made.” Romans 1:20 ICB

“The heavens tell the glory of God. And the skies announce what his hands have made.” Psalm 19:1 ICB

Step 1: Read and discuss Romans 1:20 and Psalm 19:1.

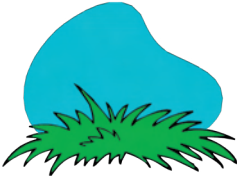
Step 2: Say, *“I want to go around the circle and have you share how your discovery (the one they shared at the end of stage three) speaks of God’s glory. What does it help us to better understand about God?”* Also, explain that you want them to make a personal application by thinking about and answering the question, *“How can I apply this knowledge of God to my own life?”*. Give students time to think about their responses. Also, if necessary, help a student out by brainstorming ideas as a group. (See Examples at end of lesson.)



Step 4: Close by challenging kids to notice the natural world around them at home, at school, or where ever they are and to look for evidence of who God is.

Examples:

The web of a spider show's me God is a designer.... He has a plan for my life.



The thick matted roots of the grass reminds me that in order to grow tall and strong as Christians we need to have a root system imbedded in the Water of Life....

All the different kinds of flowers with their different shapes, sizes, and colors tell me that God loves **variety** and individuality. He created me to be a unique individual with special abilities that I can use to bring glory to him.



MEADOW/FIELDS

Notes

Stage 1: Awaken Enthusiasm

Activity: *Identification **Time:** 20 mins

Materials: Natural objects from field habitat



This game is a lot like Steal the Bacon, but it has been adapted to help children identify and remember the flora of a habitat. You can gather the items you need for this activity during the previous days exploration. As you walk around with students and help them identify various Flora, choose eight to ten samples of leaves, flowers, grass, and seeds. Choose some that will be easy to identify and some that students will have to really think about to remember.

Step 1: Form two equal teams and line them up facing each other, 30 feet apart. Put the plant specimens in a row on the ground between two teams. The teams count off separately, so that each player has a number, and on each team there are players numbered one, two, three, etc...

Step 2: When the teams are ready, call out the name of a tree, grass, or flower, represented by one of the specimens lying between the teams, then call out a number. (To add surprise, call the numbers out of sequence.) “The next plant is a daisy, and the number is....three!

Step 3: As soon as the “threes” hear their number called, they race to the specimens, trying to be first to find the daisy. Every successful player earns two points for his team. Picking up the wrong specimen results in a loss of two points..

Step 4: Transition into the Stage 2 Activity by saying, “Yesterday, we explored the various kinds of flora (plant life) found in our field habitat. Today, we will be looking at the fauna (animal life). Does anyone know what fauna means? What falls under the category of animal life?...” Our next activity will help get us thinking about the kinds of animals we may see signs of in our field exploration today.”

*adapted from Joseph Cornell’s *Sharing Nature with Children* (1998).



Stage 2: Focus Attention

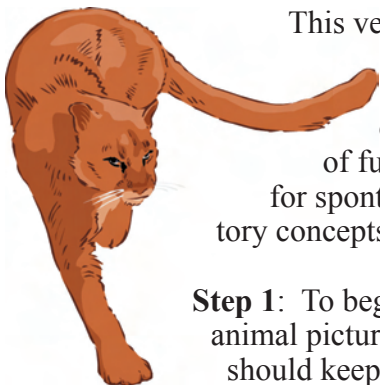
Activity: *Animals! Animals!

Time: 20 mins.

Materials: animal picture cards



She curled up in front of us and yawned. As our group watched, she carefully lifted her left hand to her mouth, licked the back of her hand and gently rubbed it against her cheek. Instantly, we knew she was a cat. She then crouched low, her entire body tensed and alert. She sprang forward and pounced on an invisible prey. “Mountain lion!” We called out, amid laughter and applause.



This version of Animals, Animals! can be played with all kinds of hilarious variations. It always draws a group together in a spirit of fun and creates many opportunities for spontaneous discussion of natural history concepts.

Step 1: To begin, explain that you’ll pass out animal picture cards and that the players should keep “their” animal’s identity secret.

After you pass out the cards, the players will act out their animals’ typical behavior, one “actor” at a time.

Step 2: When an “animal” comes “on stage,” tell him to visualize his animal in his mind first, then capture the animal’s essence in a still pose. After he’s held the pose for eight seconds, tell him to move around like the animal. To end his performance, he can, if he wishes, make the animal’s sounds, warbling, braying, and so on.



Step 3: Let the other players guess what the animal is. It is very important to let the player finish his “act” before calling out names. To help the group restrain their eagerness, tell them you’ll wave an arm when it’s time to start guessing. If a player can’t mimic his animal’s call very well, or if he quickly runs out of movements, let everyone begin guessing a bit sooner.



Note: It's all right to give clues, if you have to but you'll be surprised by the wonderful imitations most players come up with. Someone nearly always guesses what the animal is very quickly.


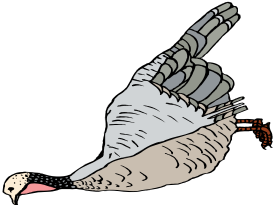

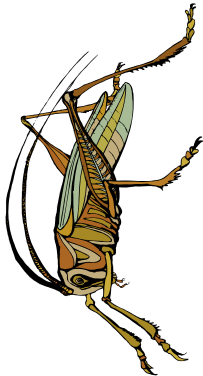
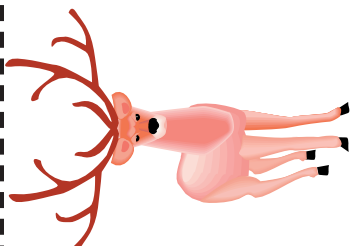
In most games that require a performance, it adds to the fun to designate an area as the “stage” and have each player come forward to perform, rather than do his act wherever he is standing. Before each performance, ask the player to give you his card, so you know what animal is and can help the audience with hints, if need be.

Step 4: Transition into Stage 3 Activity by asking students to brainstorm other examples of animal life that they might find in a field. What kinds of evidence might they find that would indicate an animal's presence?

*excerpted and adapted from Joseph Cornell's *Sharing Nature with Children* (1998).

Notes

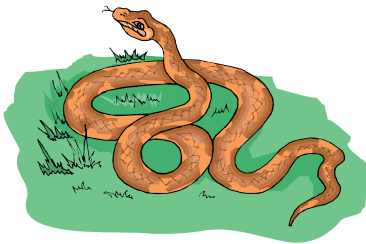


RABBIT 	TURKEY 	MOUSE 
CRICKET 		DEER

MEADOW/FIELDS



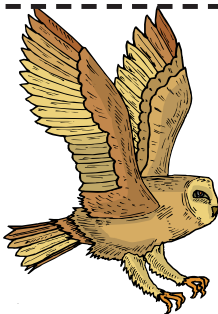
SNAKE



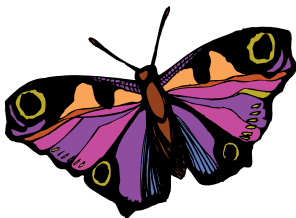
FOX



OWL



BUTTERFLY



MEADOW/FIELDS



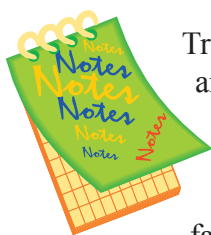
Stage 3: Direct Experience

Activity: FaunaTreasure Hunt

Time: 90 minutes

Materials: copies of the Fauna Treasure Hunt for each student

field notebook
field guides
rulers
hand lenses
colored pencils



Treasure hunts are familiar to almost every child and provide a sense of excitement and discovery. This treasure hunt is designed to help students take a closer look at the fauna that can be found in their field habitat.



Step 1: Explain to students they are about to participate in a special kind of treasure hunt. This treasure hunt will give them the opportunity to find out interesting things about the fauna (animal life) that inhabit the field.



Review yesterday's guidelines with students. Say:
"You will be working in pairs just like you did yesterday. Make sure you have all your necessary equipment. Remember, for each item listed on your fauna treasure hunt list you must show 'proof' of finding. Either, sketch a picture or diagram, or collect a sample. You will use your journal to keep a record."

MEADOW/FIELDS

Remind students of the guidelines for collecting items and to make sure each entry in their journal is clearly numbered and labeled. Students may not have time to find all the items listed, that is OK, as long as they are engaged and interested in exploring the field.



Make sure students understand they are to work with their partner, but not with other pairs.

Step 2: Establish the boundaries for the treasure hunt and a signal that will be used to bring everyone back to a the meeting area. Circulate among the pairs assisting their discovery by questioning. (See Appendix for specific questioning strategies.)



Step 3: About 60 minutes before your nature study time is over call everyone back together.

Take a few minutes and to have students share and talk about some of their discoveries. Transition into the Stage 4 Activity by saying, *“When we explore the natural world around us not only do we discover new and exciting things about God’s creation also we discover new and exciting things about God.”*

Fauna Treasure Hunt

Insects

1. Sounds: Listen for three different insect noises, describe each.
2. Look for a flying insect. Follow it. How many times does it land?
What does it land on?
3. Find a plant with three different insects on it. Identify these insects.
4. Inspect a patch of grass, look at the earth under the blades of grass to see how many mini-beasts you can find.
5. Look for leaves with holes in them? How did the holes get there?
6. Find a leaf with eggs on the underside.
7. Find an ant. Is it carrying anything? Where is it going?
8. Catch an Insect and put it in a container.
 - What do you notice first? -Can you see wings?
 - Can you see legs? How many pairs do you see?
 - Are all the legs the same length? -Is its shell shiny?
 - Look closely at the eyes, what do you notice?
 - Can you see its mouth parts?
 - Is any part of the insect moving? Which parts?
9. Draw your insect. Use a field guide to identify it.

Animals

1. Find at least one camouflaged animal or insect.
2. Evidence of animals:
 - a hole in the ground. How big is it? How deep? What type of animal might use this hole and what would they use it for?
 - an animals home -find a path made by animals
 - a piece of fur - a bone -scat
 - an animal track
3. Sit quietly in a camouflaged spot for 15 minutes. Then record what you saw and heard.

Birds

1. Look for birds that:
 - flap their wings a lot, glide as they fly. -fly in a flock.
 - hop on both legs, walk or run.
 - climb around on the bark of trees.
 - have long beaks, short beaks, fat beaks.
 - are eating- what are they eating?
 - are cleaning their feathers.
 - are perching on a branch.
 - have brightly colored feathers.
 - are well camouflaged.
2. Sit and listen for bird songs. How many different songs did you hear? Try writing down at least two bird calls.
3. Draw and identify the most interesting bird you have seen today.



Stage 4: Share Inspiration

Activity: Exploration Poems

Time: 45 mins.

Materials: Large strips of paper



NIGHT SKY

What will you find in the brilliant night sky?
 A galaxy,
 a planet,
 a mythical scythe?
 A blanket of stars,
 or the ring around mars?

What will you discover in the heavens so vast?
 Unfathomable mysteries,
 incomprehensible size?
 Alpha, Omega, the First and the Last,
 eternal power,
 invisible lines,
 the fingerprint of a Mastermind.

-Dana Waterman

MEADOW/FIELDS

Step 1: Ask students to take a few minutes to reflect on their discoveries and what they tell them about God. Say, *“Today, we will be using the format of a poem to share our experience of studying nature. I will be giving you a model to follow.”* Then share the poem *Night Sky*. Refer students to the poem model at the end of their journals.

Step 2: Compare *Night Sky* with the model and briefly discuss its characteristics. Then give students time to each write their own poems.



Step 3: When students finish, provide time and opportunity for those who are willing to share their poems.

Step 4: Transition into the final activity by saying, *“Tomorrow morning we will be sharing with the larger group our discoveries. We want them to get a feel for what we have discovered here in our field. To do that we will be working together to write a group poem, following the format of a poem written by Sgt. Leighton G. Harris (see copy of poem on following page).”*

Step 5: Read this poem to students. Ask them what the first and second stanzas describe? How is the last one different from the first two? Talk about the rhyming pattern. Also point out that most of the lines range between seven to nine syllables.

Step 6: Then explain that each pair of students that worked together on the treasure hunt will be responsible for writing at least two lines of our poem. Hold up the sheet for the group poem composition. Ask students or assign them either a “seeing”, “hearing,” or “feeling” line. Then have each pair work together to come up with a couplet for their section. In order to have enough lines, you may need to assign several couplets to each student. The first lines of each stanza and the last line of the last stanza of your group poem will be filled in after the other lines have been written. Once students have completed their couplets, assemble the groups and have them share their couplets, filling them in on the composition sheet. Have the group work together to fill in the remaining lines of the poem.

Step 7: Once the poem has been composed, read the poem together as a group. (This would also be a time to share your thoughts about the groups experience over the last two days!)

Step 8: Choose one of your students with the best penmanship to copy the poem onto posterboard, back at the camp! Have students decide how the poem will be shared tomorrow at worship. Also, you may want to ask some students if they would be willing to share the exploration poems they wrote.

***Note:** If you have some students with extra time, have them work on drawing illustrations to be glued to the poster board.





When you walk through woods I want you
to see

The floating gold of a bumble bee.
Rivers of sunlight, pools of shade,
Toadstools sleeping in mossy jade.
A cobweb net with a catch of dew,
Treetops cones against the blue,
Dancing flowers, bright green flies,
And birds to put rainbows in your eyes



When you walk through woods I want you
to hear

A million sounds in your little ear,
The scratch and rattle of wind-tossed trees,
A rush, a timid chipmunk flees.
The cry of a hawk from the distant sky,
The purr of leaves when a breeze rolls by,
Brooks that mumble, stones that ring,
And birds to teach your heart to sing.

When you walk through the woods I want you
to feel

That no mere man could make this real...
Could paint the throb of a butterfly's wings,
Could teach a woodchuck how to sing,
Could give the wonders of earth and sky;
There's something greater than you or I.
When you walk through the woods and the
birches nod,

Son, meet a friend of mine named *GOD*.
Sgt. Leighton G. Harris





Exploration Poem Model

When you write your poem you will pose the question, “What will you find....?” Think about your discoveries today. You might choose to write a poem about what you would find in a field, or you may choose to narrow it down to something even more specific like the petals of a flower. What ever you choose be creative and have fun! The model which is provided will give you some guidance but you can adapt the structure to better fit your own style.

Here is a model:

What will you find

a _____?

b _____

b _____

a _____ (repeat)

NIGHT SKY

What will you find in the brilliant night sky?

A galaxy,

a planet,

a mythical scythe?

A blanket of stars,

or the ring around mars?

What will you discover in the heavens so vast?

Unfathomable mysteries,

incomprehensible size?

Alpha, Omega, the First and the Last,

eternal power,

invisible lines,

the fingerprint of a Mastermind.

-Dana Waterman

MEADOW/FIELDS

Group Poem Composition Form

Title _____

When you walk through a field I want you to see A

(Filled in by group) A

B

B

C

When you walk through a field I want you to hear A

(Filled in by group) A

B

B

When you walk through a field I want you to feel A

(Filled in by group) A

B

B

Child, meet a friend of mine named God. D

MEADOW/FIELDS

MARSH & WETLANDS



MARSH/WETLANDS

Session One 3 hours

Introductions: 15 min.

Stage 1: Webbing 15 min

Stage 2: Sound Maps 30 mins.

Stage 3: Treasure Hunt 90 mins.

Stage 4: Share 30 mins.

Session Two 3 hours

Stage 1: Predator/Prey 20 min

Stage 2: Succession Crawl 20 mins.

Stage 3: Treasure Hunt 90 mins.

Stage 4: Share 45 mins.



What To Pack

General Supplies:

- Field guides
- Bible
- Hand lenses
- Bug boxes
- Butterflynets, plankton nets, strainer nets
- Rulers and meter sticks
- colored pencil packs (several small boxes)
- tape
- canoes or paddle boats if exploring a marsh
- First aid kit
- Whistle



Lesson Supplies:

- Ball of string
- Rope
- index cards
- two blindfolds
- swim masks (one for every two students in group)
- Photocopies of:

- Treasure hunts
- Exploration poem model
- Group poem composition form
- Strips of paper



Student Supplies:

- water
- small notebook
- pencil
- water shoes or boots

Introductions

Time: 15 mins.

Materials: Ball of String

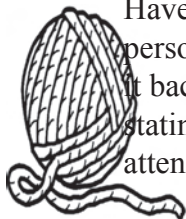


Step 1: Have children form a circle.
(Big enough that they will have to toss the ball of string to get it to another person.)

Step 2: Leader stands inside circle, near edge with ball of string.

Say: Since we will be spending some time exploring this marsh/wetland habitat together, I would like for us to take a few minutes to get acquainted with each other and to discover how we are all connected. To begin I would like each of you to introduce yourself by telling us your name and the school you attend. Start by introducing yourself and then tossing the ball of string to another student.

Once everyone has introduced themselves and they are all holding a section of the string, Say: *You can see that we are all connected together right now physically by this string. But we are also connected because we all attend schools that are part of the (-----) Conference and participate in outdoor school. I imagine there are many other ways in which we are connected. But before we can discover these we need to unravel ourselves.*



Have students reverse the process. The last person holding the ball of string should toss it back to the person who threw it to them, stating their name and the school which they attend.

Step 3: To help students discover some other ways in which they are connected, ask them to think of something about themselves they would like to share with the group. Perhaps, they enjoyed learning how to waterski this summer. Once a student has shared, then ask the other students if anyone else in the group can connect with that interest. For instance, someone else may have enjoyed water skiing also over summer, or some other form of water play activity. then throw the string to that person. who receives the ball of string would something about themselves and toss it who is able to identify a connection. students are connected by the string. difficulty identifying a connection, else in the group learned to help students generalize by *participate in any kind of summer?"* If necessary, something else about



They would
The person
then share
to someone else
Continue, until all
If a student has
for example, no one
waterski this summer,
saying, *"Did anyone
water sport activities this
ask the student to share
themselves.*

Step 4: Close by saying,
*many more ways in
interact with each*

*"I hope everyone will discover
which we are connected as we
other over the next few days."*

Remind students that we are all
connected through Jesus.



Step 5: Transition into the Stage 1
Activity by explaining to students that we
are going to use this same idea to discover how
things in the Marsh/Wetland habitat which we
will be exploring are connected to each other.

Stage 1: Awaken Enthusiasm

Activity: *Webbing

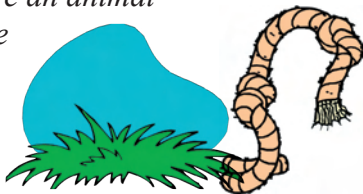
Time: 15 mins.

Materials: Ball of String



Here is a game that will make clear the interrelationship among all the members of your marsh/wetland habitat. This webbing activity vividly portrays how air, rocks, plants and animals function together in a balanced web of life.

Step 1: Have children form a circle. The leader stands inside the circle near the edge, with a ball of string: *“Who can name a plant that grows in this area?... Algae...Good. Here, Miss Algae, you hold the end of the string. Is there an animal living around here that might eat the algae?...tadpoles? ...Ah, a sumptuous meal. Mr. Tadpole, you take hold of the string here; you are connected to Miss Algae by your dependence on her flowers for your lunch. Now, who needs Mr. Tadpole for his lunch?”*



Step 2: Continue connecting the children with string as their relationships to the rest of the group emerge. Bring in new elements and considerations, such as other animals, soil, water, and so on, until the entire circle of children is strung together in a symbol of the web of life. You have created your own ecosystem.

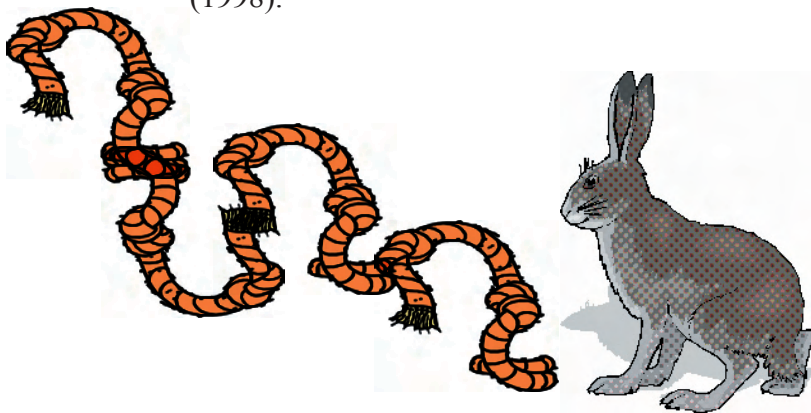
Step 3: To demonstrate how each individual is important to the whole community, take away by some plausible means one member of the web. For example, someone dumps oil in the water, or a construction company fills in the wetlands.



When the water string gives a tug. Then the organism that the water string is connected to should then give a tug and so on. The process continues until every individual is shown to be affected by the destruction of the water.

Step 4: Discuss with students the importance of being respectful of the field habitat as they explore. Say, “*It is important to remember we are entering someone else’s home and what we do there will affect the inhabitants.*” Solicit ideas from the students as to how they should conduct themselves in a respectful way in the marsh. (See Guidelines for a Naturalist next page.)

*adapted from Joseph Cornell’s *Sharing Nature with Children* (1998).



Notes

Stage 2: Focus Attention

Activity: *Sound Maps

Time: 20 mins.

Materials: index cards



The drumming of a woodpecker. Wind rushing and roaring through the tree tops. The flute-like call of a hermit thrush. The “buzz” from a nearby humming bird. Water cascading and singing down a steep, rocky incline. A thrilling chorus of natural sounds delights the players in the Sound Map Game. Children love this activity—they become completely absorbed and sit surprisingly still while making their sound maps.



Step 1: To play, begin by showing the group a 4x6 index card with an X in the center. Tell the players the card is a map, and that the X shows where they’re sitting. When they hear a sound, they should make a mark on the card that aptly describes the sound. The mark’s location should indicate as accurately as possible the direction and distance of the sound. The marks should be interpretive, not literal: the players don’t have to draw pictures of plants and animals, just a few lines that represent sound—for example, two wavy lines indicating wind, or a musical note indicating a song bird. In other words, they should spend little time drawing and most of the time listening.

Step 2: Tell the players to keep their eyes closed while they listen. Explain that cupping their hands behind their ears provides a reflective surface for catching sounds, creating a shape like the sensitive ears of a fox or kangaroo. To hear sounds behind them, they needn’t turn their heads, but just cup their hands in front of their ears.



MARSH/WETLANDS

Step 3: Select a site where the group is likely to hear a variety of sounds. It's important to have everyone find a special "listening place" quickly, so that some aren't walking around while others are already listening. It is helpful to give the group one minute



to find a spot and tell them to stay in the same spot until the end of the game. Giving the players enough time to disperse fairly widely will ensure a diversity of sound maps and greater interest in sharing.

How long you should play depends on the group's age, attention span, and how well-supplied the environment is with sounds. A good basic guideline is ten minutes for adults 5 to ten minutes for children. Try calling the group back together by imitating a natural sound. As the players assemble, ask them to share their maps with a partner.

It's sometimes hard to find a site that's protected from the sounds of cars and machinery, but these noisy areas are ideal for teaching lessons about noise pollution. After the children have drawn their maps and shared them, you can ask questions such as:

How many different sounds did you hear?
Which sounds did you like best? Why? Which sounds did you like least? Why? Which sounds had you never heard before? Do you know what made the sounds?



Step 4: Transition to the Stage 3 Activity by saying, "One of the ways we can experience the fauna (animals) of the marsh is by listening. Ask students to brainstorm other ways they might look for animal life in a marsh. What kinds of evidence might they find that would indicate an animal's presence?"

*adapted from Joseph Cornell's *Sharing Nature with Children* (1998).

Stage 3: Direct Experience

Activity: Flora and Fauna Treasure Hunt

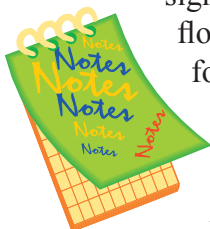
Time: 90 minutes

Materials: copies of Treasure Hunt for each student

- field notebook
- field guides
- rulers
- hand lenses
- colored pencils



Treasure hunts are familiar to almost every child and provide a sense of excitement and discovery. This treasure hunt is designed to help students take a closer look at the flora (plant life) and fauna (animal life) that can be found in their marsh/wetland habitat.



Step 1: Explain to students they are about to participate in a special kind of treasure

hunt. This treasure hunt will give them the opportunity to find out interesting things about the flora (plant life) and fauna (animals)



that inhabit the marsh/wetland. Say: *"You will be working in pairs and each pair will need to have a set of colored pencils, hand lense, scissors, tape, and two notebooks. For each item listed on your Flora and Fauna Treasure Hunt list you must show "proof" of finding. Either, sketch a picture or diagram, or collect a sample. You will use your journal to keep a record."*



Remind students of the guidelines for collecting items. Explain that in some cases they will be asked to identify certain objects and that they may use the field guides in the backpack

MARSH/WETLANDS

provided for your group. Let students know they do not have to complete the treasure hunt in the order listed, but they should make sure each entry in their journal is clearly numbered and labeled. Students may not have time to find all the items listed, that is OK as long as they are engaged and interested in exploring the marsh.



Make sure students understand they are to work with their partner, but not with other pairs.

Step 2: Establish the boundaries for the treasure hunt and a signal that will be used to bring everyone back to a the meeting area. Circulate among the pairs assisting their discovery by questioning. (See Appendix for specific questioning strategies.)



Step 3: About 35 minutes before your nature study time is over call everyone back together. Ask students to share their most interesting discovery and why they found it interesting. Transition into Stage 4 Activity by saying: *Because all things in the natural world were created by God they give us a little glimpse of who God is, His character and personality and divine qualities.*

Notes

Treasure Hunt

***Note:** Any object you find counts only for one item on the Treasure Hunt list. For instance, if you find a broken egg shell it can either count for item seven or item ten but not both.

Find:

1. One seed dispersed by the wind.
2. Exactly 100 of something.
3. Three natural items that will float.
4. Three kinds of seeds.
5. One camouflaged insect or animal.
6. Something round.
7. Part of an egg.
8. Part of a shell.
9. Something fuzzy.
10. Something sharp.
11. Something perfectly straight.
12. Something beautiful.
13. Something squishy.
14. Something decomposing.
15. Two different kinds of spider's webs.
16. A web that has something caught in it.
17. Something that makes a noise.
18. Something white.
19. Something important in nature.
20. Something soft.
21. Something slippery.
22. A suntrap.
23. Catch and identify two different kinds of water insects.
24. Find a reptile or amphibian.
25. Something that can be found above the water.
26. Something that can be found under the water.
27. Something that reminds you of yourself.
28. Catch, identify, and release a fish.
29. Take a sediment sample from the lake bottom
-deep water -shallow water -What did you find?
30. Something that changes.



Stage 4: Share Inspiration

Activity: Understanding what we don't see.

Time: 30 Minutes

Materials: Bible

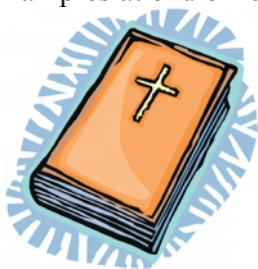


“There are things about God that people cannot see- his eternal power and all the things that make him God. But since the beginning of the world those things have been easy to understand. They are made clear by what God has made.” Romans 1:20 ICB

“The heavens tell the glory of God. And the skies announce what his hands have made.” Psalm 19:1 ICB

Step 1: Read and discuss Romans 1:20 and Psalm 19:1.

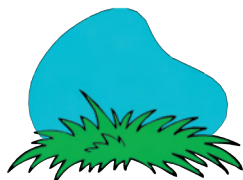
Step 2: Say, *“I want to go around the circle and have you share how your discovery (the one they shared at the end of stage three) speaks of God’s glory. What does it help us to better understand about God?”* Also, explain that you want them to make a personal application by thinking about and answering the question, *“How can I apply this knowledge of God to my own life?”*. Give students time to think about their responses. Also, if necessary, help a student out by brainstorming ideas as a group. (See Examples at end of lesson.)



Step 4: Close by challenging kids to notice the natural world around them at home, at school, or wherever they are and to look for evidence of who God is.

Examples:

The web of a spider show's me God is a designer.... He has a plan for my life.



The thick matted roots of the grass reminds me that in order to grow tall and strong as Christians we need to have a root system imbedded in the Water of Life....

All the different kinds of flowers with their different shapes, sizes, and colors tell me that God loves variety and individuality. He created me to be a unique individual with special abilities that I can use to bring glory to him.

**Notes**

Stage 1: Awaken Enthusiasm

Activity: *Predator/Prey

Time: 15 mins

Materials: Blind Folds



This game introduces food chains and the way they work in nature.

Step 1: In an open clearing, form a circle about 15 feet across. Blindfold two of the children and have them stand in the center of the circle.



Step 2: Ask one of the children to name a predator that lives in the area, and ask the other child to name a prey. The predator tries to catch his prey by listening for him, then tracking him down and tagging him. If either animal goes to near the edge of the circle, the children tap him twice.

Stress the need for silence while the game is in progress, and have the players make things more realistic by imitating the animals they've chosen to be.

For variety experiment with the numbers of predators and prey. Put bells on some of the animals, forcing them to modify their strategy of hunting or of avoiding capture. If your predator is not as bold as he could be, and interest is lagging, tighten up the circle, bringing the predator and his prey closer together.





Step 3: Discuss the similarities in behavior between the predators and prey in the game and real predator/prey relationships in the marsh/wetland. Ask students to suggest some predator/prey relationships that could be found in the marsh/wetland habitat.

Step 4: Transition into the Stage 2 Activity by saying, “Yesterday, we explored the various kinds of flora (plant life) and fauna (animals) found in our marsh habitat.

Our next activity will help us look at some of these things from a different perspective. I think you will find that it will capture your imagination.

**adapted from Joseph Cornell’s *Sharing Nature with Children* (1998).*



Notes

MARSH/WETLANDS

Stage 2: Focus Attention

Activity: *Succession Crawl

Time: 20 mins.



Plant succession is the process by which soil and water conditions of an area gradually change, allowing new species to come in and eventually establish themselves, and forcing old species to migrate to more favorable conditions. As you move farther away from the water, the soil becomes drier and its composition changes. You will be able to observe several plant types in successive zones.

Step 1: Have children crawl from the outside zones toward the edge of the water. By crawling and closely examining the ground, they will get a feeling for the different soil conditions needed by the different types of plants in the rings.

Step 2: Ask the children to share their discoveries as they find them. One discovery might be coming across a new ring with its special kinds of trees, shrubs, plants, grasses, or wetter and stronger-smelling soil.

Step 3: When the child reaches the water, have them draw a map of the successive circles of plant life. Label each ring from the wettest to the driest, and list the kinds of plants that grow there.

Step 4: Once the group has come back together, have students share their experiences. Ask them what was difficult about this activity, what was surprising to them.

Step 5: Transition into the Stage 3 activity by saying, “*Our next activity will help us picture the marsh in a different way. It will require a sharp eye for detail.*”

*adapted from Joseph Cornell’s *Sharing Nature with Children* (1998).



Stage 2: Focus Attention

Activity: *Camera.

Time: 30 mins.

Materials: goggles- if you want to take underwater pictures



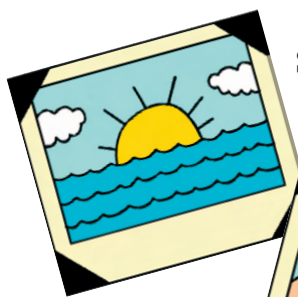
In this activity one player takes the role of photographer, and the other plays the camera. The photographer guides the camera, who keeps his eyes closed, on a search for beautiful and interesting pictures. When the photographer sees something he likes, he points the camera's lens (eyes) at it framing the object he wants to "Shoot" Then he presses the shutter button (see below) to open the lens.

It's important that the camera keep his eyes closed between pictures, so that the 3-to- 5-second "exposure" will have the impact of surprise.

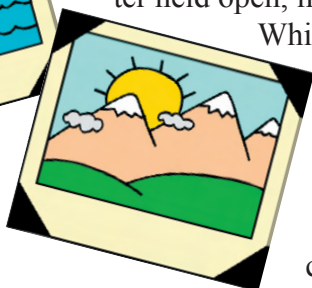
Encourage photographers to be creative in choosing and framing pictures. Tell them, "You can make stunning photographs by taking angles and perspectives. can both lie down under your picture looking up, or you can put your camera very close to a tree's bark or leaves. Try looking down into a flower, or panning a horizon. Be open to the opportunities of the moment.



The children press the "shutter button" by tapping the camera's shoulder. A second tap tells the camera to close his eyes. For the first picture, it may help to say "Open" with the first tap, and "Close" with the second. The preferred "exposure time" is 3-to-5 seconds. With longer exposures, the camera's mind begins to wander, reducing the impact of the picture- just as too much light overexposes real film.



Show the players how to pan the camera- i.e., move it slowly with the shutter held open, like a movie camera.



move-camera's inter-also pan verti-starting at the base of a tree the trunk to the highest branches, then into the sky.

While panning, they may keep the shutter open longer than 5 seconds, since the ment will hold the est. Suggest that they cally-for example, and slowly moving up

The photographers can prepare their cameras for the next picture by telling them which lens to use. For a picture of a flower, tell the camera to choose a close-up lens; for a sweeping scenic panorama, a wide angle lens; and for a far-away object, a telephoto lens. Take time to talk to the group about the elements of creative and beautiful pictures- otherwise they may end up with pictures of deer scat or the insides of trash cans! This is especially important with small children. It's also very important to encourage the photographers and cameras to talk only when it's unavoidable. Explain that silence creates pictures that have greater impact for the camera.

You may need to take time to show the group how to guide their "blind" cameras sensitively and protectively by holding the camera's hand and gently pulling an arm in the direction you want to go.



Tell the photographers they'll have about ten minutes to take pictures, then they'll trade roles. It works well to tell the photographers to take a certain number of pictures (6 to ten is fine), then trade places with their partners. With these rules, everyone will finish at about the same time.



After everyone has played both roles, give each player a 3 X 5 card and tell them, “Remember one of the pictures you took when you played camera. Develop it by drawing it, and give it to the photographer.” If some players groan self-consciously about their lack of artistic talent, tell them they can blame the quality of the pictures on the photographer!

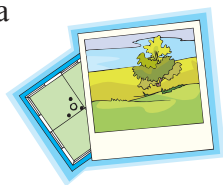
The goal of the game is to give the players a more lively appreciation of nature’s beauty. You can extend the game by asking the group to write about their pictures. You might also have the photographers take 8 to ten pictures on a single theme: plant succession, animal homes, underwater scenes, lakescapes for instance. The camera can then write a story in which he must use all the pictures. Afterwards, the camera and photographer can discuss their stories.



Step 1: Explain activity to students. Pair up students as camera/photographer partners.

Step 2: Establish the boundaries for this activity. Agree upon a signal for switching and for ending the activity.

Step 3: Once students reassemble have them draw their picture. Then spend a few minutes having students share their experience. How did it feel to be a camera!? What surprised them about this activity? Did they prefer being the photographer or the camera? How did they decide what would make a good picture? etc....



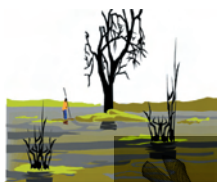
Step 4: Transition into the Stage 3 Activity by saying today during our exploration activity we will be taking some close ups in four specific areas that make up the marsh habitat.

Stage 3: Direct Experience

Activity: Marsh Zone Exploration

Time: 90 minutes

Materials: copies of the Marsh Zone Exploration for each student: field notebook, meter sticks, field guides, plankton nets, meter sticks, strainer nets, hand lenses, colored pencils



Each step of this activity will direct students' observations and help them learn more about the marsh habitat. Using the survey form, they will perform a series of tasks that will help them sample the life forms and living conditions in four different zones. You

will need to
divide your group
into four smaller
groups, each group
will rotate through
all four of the zones.

Before this activity, the four zones that will be explored. Using a length of rope you will need to run a line from the upland end of the marsh to the deep water boundary. Choose four points along this line which fall within plant communities that represent a transition between drier and wetter extremes of the marsh. For instance, you might sample plants in the emergent, floating-leaved, and submergent zones. At each station measure and mark a one meter square plot or simply designate specific boundaries for each zone using natural landmarks. (Between the big rock and the fallen tree, no farther than the grass line.)



MARSH/WETLANDS

Step 1: Begin by having students suggest the types of zones in a marsh. Say to students, “During the next hour we will be taking a closer looking at four different zones within this marsh. You will rotate the different zones spending about 15 minutes in each one completing a survey form that will help you sample the life forms and living conditions in each zone.”

Step 2: Hand out forms and go over them with students making sure they understand what they are being asked to do. Have students tape the survey forms into their journals.

You may want to discuss how to measure the temperature of water using the thermometers, as well as clarify exactly what they would need to do when drawing a food web.

Step 3: Divide group into four smaller groups and assign them a starting zone. Make sure everyone is clear about how they are to rotate through the zones. Also you should establish a signal for switching. (A five minute warning, and then a switch signal.) Allow groups about 15 to 20 minutes per zone.

Step 4: While groups are waiting for all members to come back from the zones have them work on finishing the food webs for each zone. With the whole group discuss what they found in the zones. Refer back and tie in concepts learned in previous activities. If time allows work as a group to construct a food web that encompasses all the marsh zones they surveyed.



Marsh Zone Exploration

Station #1

Measure, describe, and record the following:

1. air temperature: _____
2. soil temperature: _____
3. water temperature: _____
-surface _____
-bottom _____
4. sunlight intensity (percent of the ground or water surface exposed to direct sunlight.) _____
5. water level (check one):
 - a. at the surface _____
 - b. above the surface _____ depth _____
 - c. below the surface _____ distance _____

6. Identify and count all the plants and animals you can.

7. Create a food web diagram for this zone.

Station #2

Measure, describe, and record the following:

1. air temperature: _____
2. soil temperature: _____
3. water temperature: _____
-surface _____
-bottom _____
4. sunlight intensity (percent of the ground or water surface exposed to direct sunlight.) _____
5. water level (check one):
 - a. at the surface _____
 - b. above the surface _____ depth _____
 - c. below the surface _____ distance _____

6. Identify and count all the plants and animals you can.

7. Create a food web diagram for this zone.

MARSH/WETLANDS



Station #3

Measure, describe, and record the following:

1. air temperature: _____
2. soil temperature: _____
3. water temperature: _____
-surface _____
-bottom _____
4. sunlight intensity (percent of the ground or water surface exposed to direct sunlight.)
5. water level (check one):
 - a. at the surface _____
 - b. above the surface _____ depth _____
 - c. below the surface _____ distance _____

6. Identify and count all the plants and animals you can.
7. Create a food web diagram for this zone.

Station #4

Measure, describe, and record the following:

1. air temperature: _____
2. soil temperature: _____
3. water temperature: _____
-surface _____
-bottom _____
4. sunlight intensity (percent of the ground or water surface exposed to direct sunlight.)
5. water level (check one):
 - a. at the surface _____
 - b. above the surface _____ depth _____
 - c. below the surface _____ distance _____

6. Identify and count all the plants and animals you can.
7. Create a food web diagram for this zone.

MARSH/WETLANDS

Stage 4: Share Inspiration

Activity: Exploration Poems


Time: 45 mins.

Materials: Large strips of paper



NIGHT SKY

What will you find in the brilliant night sky?
 A galaxy,
 a planet,
 a mythical scythe?
 A blanket of stars,
 or the ring around mars?



What will you discover in the heavens so vast?
 Unfathomable mysteries,
 incomprehensible size?
 Alpha, Omega, the First and the Last,
 eternal power,
 invisible lines,
 the fingerprint of a Mastermind.

-Dana Waterman

MARSH/WETLANDS

Step 1: Ask students to take a few minutes to reflect on their discoveries and what they tell them about God. Say, *“Today, we will be using the format of a poem to share our experience of studying nature. I will be giving you a model to follow.”* Then share the poem *Night Sky*. Refer students to the poem model at the end of their journals.

Step 2: Compare *Night Sky* with the model and briefly discuss its characteristics. Then give students time to each write their own poems.



Step 3: When students finish provide time and opportunity for those who are willing to share their poems.

Step 4: Transition into the final activity by saying, *“Tomorrow morning we will be sharing with the larger group our discoveries. We want them to get a feel for what we have discovered here in our field. To do that we will be working together to write a group poem, following the format of a poem written by Sgt. Leighton G. Harris (see copy of poem on following page).”*

Step 5: Read this poem to students. Ask them what the first and second stanzas describe? How is the last one different from the first two? Talk about the rhyming pattern. Also point out that most of the lines range between seven to nine syllables.

Step 6: Then explain that each pair of students that worked together on the treasure hunt will be responsible for writing at least two lines of our poem. Hold up the sheet for the group poem composition. Ask students or assign them either a “seeing”, “hearing,” or “feeling” line. Then have each pair work together to come up with a couplet for their section. In order to have enough lines, you may need to assign several couplets to each student. The first lines of each stanza and the last line of the last stanza of your group poem will be filled in after the other lines have been written. Once students have completed their couplets, assemble the groups and have them share their couplets, filling them in on the composition sheet. Have the group work together to fill in the remaining lines of the poem.

Step 7: Once the poem has been composed, read the poem together as a group. (This would also be a time to share your thoughts about the groups experience over the last two days!)

Step 8: Choose one of your students with the best penmanship to copy the poem onto posterboard, back at the camp! Have students decide how the poem will shared tomorrow at worship. Also, you may want to ask some students if they would be willing to share the exploration poems they wrote.

***Note:** If you have some students with extra time- have them work on drawing illustrations to be glued to the poster board.





When you walk through woods I want you
to see

The floating gold of a bumble bee.
Rivers of sunlight, pools of shade,
Toadstools sleeping in mossy jade.
A cobweb net with a catch of dew,
Treetops cones against the blue,
Dancing flowers, bright green flies,
And birds to put rainbows in your eyes



When you walk through woods I want you
to hear

A million sounds in your little ear,
The scratch and rattle of wind-tossed trees,
A rush, a timid chipmunk flees.
The cry of a hawk from the distant sky,
The purr of leaves when a breeze rolls by,
Brooks that mumble, stones that ring,
And birds to teach your heart to sing.

When you walk through the woods I want you
to feel

That no mere man could make this real...
Could paint the throb of a butterfly's wings,
Could teach a woodchuck how to sing,
Could give the wonders of earth and sky;
There's something greater than you or I.
When you walk through the woods and the
birches nod,

Son, meet a friend of mine named *GOD*.
Sgt. Leighton G. Harris





Exploration Poem Model

When you write your poem you will pose the question, “What will you find....?” Think about your discoveries today. You might choose to write a poem about what you would find in a field, or you may choose to narrow it down to something even more specific like the petals of a flower. What ever you choose be creative and have fun! The model which is provided will give you some guidance but you can adapt the structure to better fit your own style.

Here is a model:

What will you find

a _____?

b _____

b _____

a _____ (repeat)

NIGHT SKY

What will you find in the brilliant night sky?

A galaxy,

a planet,

a mythical scythe?

A blanket of stars,

or the ring around mars?

What will you discover in the heavens so vast?

Unfathomable mysteries,

incomprehensible size?

Alpha, Omega, the First and the Last,

eternal power,

invisible lines,

the fingerprint of a Mastermind.

-Dana Waterman

MARSH/WETLANDS

Group Poem Composition Form

Title _____

When you walk through a field I want you to see A

(Filled in by group) A

B

_____ C

_____ C

When you walk through a field I want you to hear A

(Filled in by group) A

B

_____ D

_____ C

_____ C

When you walk through a field I want you to feel A

(Filled in by group) A

B

_____ C

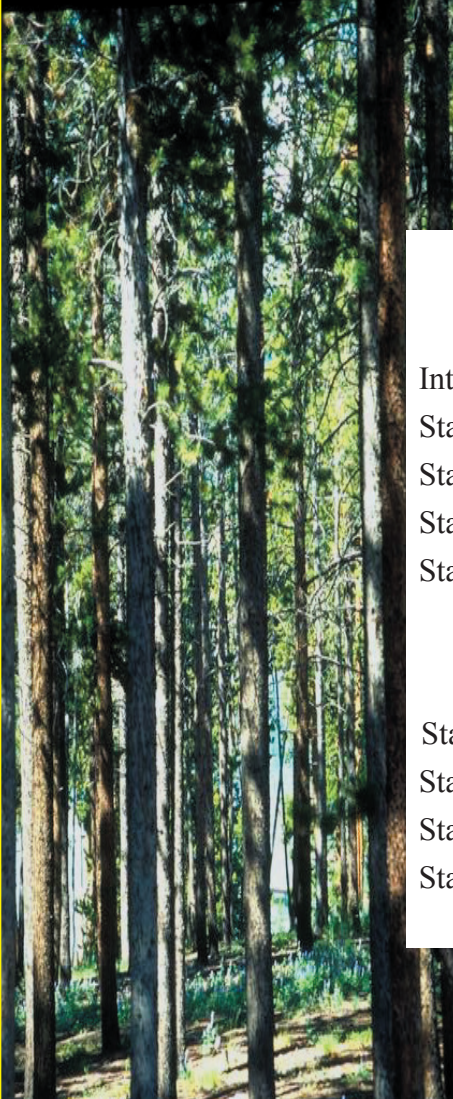
_____ C

Child, meet a friend of mine named God. D

MARSH/WETLANDS



FOREST & WOODLANDS



Session One 3 hours

- Introductions: 15 min.
- Stage 1: Webbing 15 min
- Stage 2: Earth Windows 30 mins.
- Stage 3: Treasure Hunt 90 mins.
- Stage 4: Share 30 mins.

Session Two 3 hours

- Stage 1: Predator/Prey 20 min
- Stage 2: Sound Maps 20 mins.
- Stage 3: Treasure Hunt 90 mins.
- Stage 4: Share 45 mins.

FOREST/WOODLANDS



What To Pack

General Supplies:

- Field guides
- Bible
- Hand lenses
- Bug boxes
- Butterfly nets,
- Rulers
- Colored pencil packs (several small boxes)
- Tape
- First aid kit
- Whistle



Lesson Supplies:

- Ball of string
- Two blindfolds
- Index cards
- Photocopies of:

- Treasure Hunts
- Exploration poem model
- Group poem composition form
- Strips of paper



Student Supplies:

- water
- small notebook
- pencil



Introductions

Time: 15 mins.

Materials: Ball of String



Step 1: Have children form a circle.
(Big enough that they will have to toss the ball of string to get it to another person.)

Step 2: Leader stands inside circle, near edge with ball of string.

Say: Since we will be spending some time exploring this Forest/Woodland habitat together I would like for us to take a few minutes to get acquainted with each other and to discover how we are all connected. To begin I would like each of you to introduce yourself by telling us your name and the school you attend. Start by introducing yourself and then tossing the ball of string to another student.

Once everyone has introduced themselves and they are all holding a section of the string, Say: *You can see that we are all connected together right now physically by this string. But we are also connected because we all attend schools that are part of the (-----) Conference and participate in outdoor school. I imagine there are many other ways in which we are connected. But before we can discover these we need to unravel ourselves.*



Have students reverse the process. The last person holding the ball of string should toss it back to the person who threw it to them, stating their name and the school which they attend.

Step 3: To help students discover some other ways in which they are connected, ask them to think of something about themselves they would like to share with the group. Perhaps, they enjoyed learning how to waterski this summer. Once a student has shared, then ask the other students if anyone else in the group can connect with that interest. For instance, someone else may have enjoyed water skiing also over summer, or some other form of water play activity. then throw the string to that person. who receives the ball of string would something about themselves and toss it who is able to identify a connection. all students are connected by student has difficulty identifying example no one else in the group this summer, help students *“Did anyone participate in activities this summer?”* If share something else about



They would
The person
then share
to someone else
Continue, until
the string. If a
a connection, for
learned to waterski
generalize by saying,
any kind of water sport
necessary, ask the student to
themselves.

Step 4: Close by saying,
*many more ways in
interact with each*

*“I hope everyone will discover
which we are connected as we
other over the next few days.”*

Remind students that we are all
connected through Jesus.



Step 5: Transition into the Stage 1
Activity by explaining to students that we
are going to use this same idea to discover how
things in the Forest/Woodland habitat which
we will be exploring are connected to each
other.

FOREST/WOODLAND



Stage 1: Awaken Enthusiasm

Activity: Webbing

Time: 15 mins.

Materials: Ball of String



Here is a game that will make clear the interrelationship among all the members of your forest habitat. This webbing activity vividly portrays how air, rocks, plants and animals function together in a balanced web of life.

Step 1: Have children form a circle. The leader stands inside the circle near the edge, with a ball of string: *"Who can name a plant that grows in this area?..."*

Grass...Good. Here, Miss Grass, you hold the end of the string.

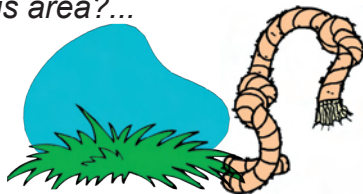
Is there an animal living around here that might eat the grass?...

Rabbits? ...Ah, a sumptuous

meal. Mr. Rabbit, you take hold of the string here; you are connected to Miss

Grass by your dependence on her flowers for your lunch.

Now, who needs Mr. Rabbit for his lunch?"



Step 2: Continue connecting the children with string as their relationships to the rest of the group emerge. Bring in new elements and considerations, such as other animals, soil, water, and so on, until the entire circle of children is strung together in a symbol of the web of life. You have created your own ecosystem.

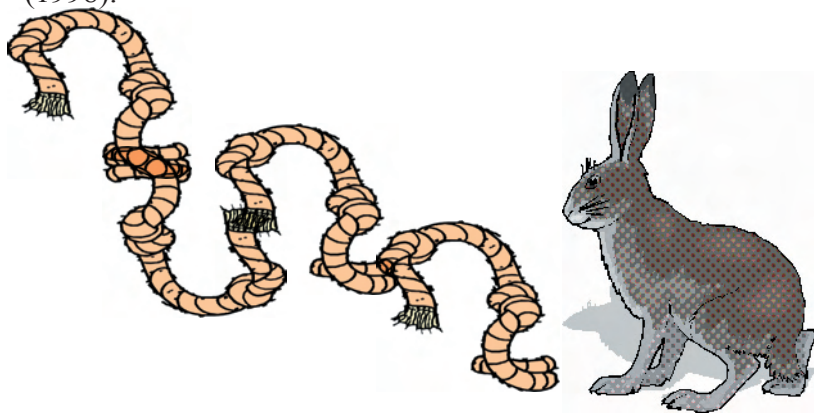


Step 3: To demonstrate how each individual is important to the whole community, take away by some plausible means one member of the

web. For example, a fire or a logger kills a tree. When the tree gives a tug. The process continues until every individual is shown to be affected by the destruction of the tree.

Step 4: Discuss with students the importance of being respectful of the forest habitat as they explore. Say, *“It is important to remember we are entering someone else’s home and what we do there will affect the inhabitants.”* Solicit ideas from the students as to how they should conduct themselves in a respectful way in the forest. (See Guidelines for a Naturalist next page.)

*adapted from Joseph Cornell’s *Sharing Nature with Children* (1998).



Notes

Stage 2: Focus Attention

Activity: *Earth Windows

Time: 30 mins.

Materials: Forest Floor

Earth Windows gives an experience of the forest through the forest's own eyes.



The forest looks fresh and exciting when you see it from a brand-new angle. In this game, the students lie still on the forest floor, absorbed in watching and listening to swaying trees, fluttering birds, and the rushing wind. Through holes in its leafy ceiling, silent clouds peek into the children's woodsy room. Animals may come very close because children are quiet and hidden.

Step 1: Have everyone lie down and begin thinking of himself as part of the Earth, looking skyward. Cover each child's body with leaves, sticks and pine needles-clear up to the sides of his head. Leave only the face exposed, and use enough leaves, and sticks to give him a feeling of being down inside the earth. Now place leaves (pine needles work best) over the children's faces patch work-fashion. Make sure the leaves are free of dirt, and tell children to close their eyes as you arrange this final bit of covering.



Step 2: Tell children you will give a signal when it's time to come back; this will help them stay under the leaves longer without getting restless. You should give the signal before they become restless. Surprisingly, 20 minutes is usually not too long.

FOREST/WOODLAND

Note: In a large group, work quickly and have the children help bury each other. Work in one direction, away from those covered first. Then when the first-covered emerge, you can steer them quietly away from the others who are enjoying the forest quiet. Any individuals or pairs who are likely to talk and disturb those around them can be buried some distance away from the others.

Children will be much more agreeable to the idea of being covered with soil and leaves if they've been digging and crawling on the forest floor just before the game begins. It's important also to say something in advance about the bugs that may crawl over them. Play this down! You may want to let the children first handle various bugs, allowing the bugs to crawl over them. This is often a lot of fun- the children lose their early learned prejudices against insects, and begin to appreciate these fascinating little creatures. Encourage them to stay calm while lying under the leaves and being crawled upon; ask them just to feel what the bug is doing, so that they can tell the others about it afterwards.

Step 3: Once the group has come back together, have students share their experiences. Ask them what was difficult about this activity, what was surprising to them. Transition into the Stage 3 activity by saying to students, *“During our next activity, you will be making even more interesting discoveries as you explore this forest habitat with a partner. Today, you will be exploring the Flora (plant life) found in the forest. As you know from this activity, sometimes we experience and see things differently when we look at them from a different perspective. When you explore today, try to use different perspectives.”* Solicit several ideas from students.

*adapted from Joseph Cornell's *Sharing Nature with Children* (1998).



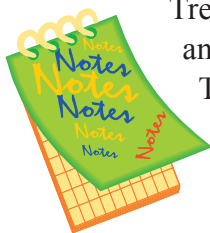
Stage 3: Direct Experience

Activity: Flora Treasure Hunt

Time: 90 minutes

Materials: copies of Treasure Hunt for each student

- field notebook
- field guides
- rulers
- hand lenses
- colored pencils



Treasure hunts are familiar to almost every child and provide a sense of excitement and discovery.

This treasure hunt is designed to help students take a closer look at the flora that can be found in their forest habitat.



Step 1: Explain to students they are about to participate in a special kind of treasure hunt. This treasure hunt will give them the opportunity to find out interesting things about the flora (plant life) that inhabits the forest. Say:

"You will be working in pairs and each pair will need to have a set of colored, pencils, hand lense, scissors, tape, and two notebooks. For each item listed on your Flora Treasure Hunt list you must show "proof" of finding. Either, sketch a picture or diagram, or collect a sample. You will use your journal to keep a record."



Remind students of the guidelines for collecting items. Explain that in some cases they will be asked to identify certain objects and that they may use the field

guides in the backpack provided for your group. Let students know they do not have to complete the treasure hunt in the order listed, but they should make sure each entry in their journal is clearly numbered and labeled.



Students may not have time to find all the items listed, that is OK as long as they are engaged and interested in exploring the forest. Make sure students understand they are to work with their partner, but not with other pairs.



Step 2: Establish the boundaries for the treasure hunt and a signal that will be used to bring everyone back to the meeting area. Circulate among the pairs assisting their discovery by questioning. (See Appendix for specific questioning strategies.)

Step 3: About 35 minutes before your nature study time is over call everyone back together. Ask students to share their most interesting discovery and why they found it interesting. Transition into Stage 4 Activity by saying: *Because all things in the natural world were created by God they give us a little glimpse of who God is, His character and personality and divine qualities.*

Notes

Flora Treasure Hunt

FOREST/WOODLAND

1. **Texture:** -Things that feel soft, hard, cushy, crinkly, smooth, rough.
-Three different types of bark (make a rubbing of each).
2. **Shapes:** -Find leaves with smooth edges, edges with tiny teeth, deeply cut edges.
-Find at least three different shapes of trees.
-Find three different mushroom shapes.
3. **Color:** -Find plants with at least one shade of red, pink, orange, brown, yellow, white, purple. Find five shades of green.
4. **Size:** -Find a tree as tall as you are, as tall as two people, as tall as three people.
-Choose a tall tree and measure its height. (ask your leader for some hints)
-Find a leaf as wide as your foot, as long as your little finger.
-Find the widest, skinniest, longest, shortest, leaf.
5. **Patterns:** -Find three trees that have different leaf arrangements. Identify each tree and its type of leaf arrangement.
6. **Temperature:** -Find a spot that gets the most sunlight, the least sunlight.
-Find the coldest and hottest spot.
-Find the driest place, the wettest place.
7. **Smell:** -Find a plant that has a sweet smell, that has no smell, that has a strong smell.
8. **Fruit:** -Find a tree or plant that has seeds, nuts, cones, fruit, berries.
9. **Identify:** Three types of:
 - Trees
 - Mushrooms
 - Moss
 - Lichen
 - Plants
10. Draw and label a picture of your favorite flora find today.



Stage 4: Share Inspiration

Activity: Understanding what we don't see.

Time: 30 Minutes

Materials: Bible



“There are things about God that people cannot see - his eternal power and all the things that make him God. But since the beginning of the world those things have been easy to understand. They are made clear by what God has made.” Romans 1:20 ICB

“The heavens tell the glory of God. And the skies announce what his hands have made.” Psalm 19:1 ICB

Step 1: Read and discuss Romans 1:20 and Psalm 19:1.

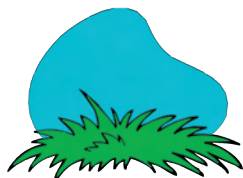
Step 2: Say, “I want to go around the circle and have you share how your discovery (the one they shared at the end of stage three) speaks of God’s glory. What does it help us to better understand about God?” Also, explain that you want them to make a personal application by thinking about and answering the question, “How can I apply this knowledge of God to my own life?”. Give students time to think about their responses. Also, if necessary, help a student out by brainstorming ideas as a group. (See Examples at end of lesson.)



Step 4: Close by challenging kids to notice the natural world around them at home, at school, or wherever they are and to look for evidence of who God is.

Examples:

The web of a spider show's me God is a designer.... He has a plan for my life.



The thick matted roots of the grass reminds me that in order to grow tall and strong as Christians we need to have a root system imbedded in the Water of Life....

All the different kinds of flowers with their different shapes, sizes, and colors tell me that God loves variety and individuality. He created me to be a unique individual with special abilities that I can use to bring glory to him.

**Notes**

Stage 1: Awaken Enthusiasm

Activity: *Predator/Prey

Time: 15 mins

Materials: Blind Folds



This game introduces food chains and the way they work in nature.

Step 1: In an open clearing, form a circle about 15 feet across. Blindfold two of the children and have them stand in the center of the circle.



Step 2: Ask one of the children to name a predator that lives in the area, and ask the other child to name a prey. The predator tries to catch his prey by listening for him, then tracking him down and tagging him. If either animal goes to near the edge of the circle, the children tap him twice.

Stress the need for silence while the game is in progress, and have the players make things more realistic by imitating the animals they've chosen to be.

For variety experiment with the numbers of predators and prey. Put bells on some of the animals, forcing them to modify their strategy of hunting or of avoiding capture. If your predator is not as bold as he could be, and interest is lagging, tighten up the circle, bringing the predator and his prey closer together.



FOREST/WOODLANDS





Step 3: Discuss the similarities in behavior between the predators and prey in the game and real predator/prey relationships in the forest. Ask students to suggest some predator /prey relationships that could be found in the forest habitat.

Step 4: Transition into the Stage 2 Activity by saying, *“Yesterday, we explored the various kinds of flora (plant life) and fauna (animals) found in our forest habitat.*

Our next activity will help us look at some of these things from a different perspective. I think you will find that it will capture your imagination.

*adapted from Joseph Cornell’s *Sharing Nature with Children* (1998).



Notes

Stage 2: Focus Attention

Activity: *Sound Maps

Time: 20 mins.

Materials: index cards



The drumming of a woodpecker. Wind rushing and roaring through the tree tops. The flute-like call of a hermit thrush. The “buzz” from a nearby humming bird. Water cascading and singing down a steep, rocky incline. A thrilling chorus of natural sounds delights the players in the Sound Map Game. Children love this activity - they become completely absorbed and sit surprisingly still while making their sound maps.



Step 1: To play, begin by showing the group a 4x6 index card with an X in the center. Tell the players the card is a map, and that the X shows where they’re sitting. When they hear a sound, they should make a mark on the card that aptly describes the sound. The mark’s location should indicate as accurately as possible the direction and distance of the sound. The marks should be interpretive, not literal: the players don’t have to draw pictures of plants and animals, just a few lines that represent sound - for example, two wavy lines indicating wind, or a musical note indicating a song bird. In other words, they should spend little time drawing and most of the time listening.

Step 2: Tell the players to keep their eyes closed while they listen. Explain that cupping their hands behind their ears provides a reflective surface for catching sounds, creating a shape like the sensitive ears of a fox or kangaroo. To hear sounds behind them, they needn’t turn their heads, but just cup their hands in front of their ears.



Step 3: Select a site where the group is likely to hear a variety of sounds. It's important to have everyone find a special "listening place" quickly, so that some aren't walking around while others are already listening. It is helpful to give the group one minute



to find a spot and tell them to stay in the same spot until the end of the game. Giving the players enough time to disperse fairly widely will ensure a diversity of sound maps and greater interest in sharing.

How long you should play depends on the group's age, attention span, and how well-supplied the environment is with sounds. A good basic guideline is 10 minutes for adults five to 10 minutes for children. Try calling the group back together by imitating a natural sound. As the players assemble, ask them to share their maps with a partner.

It's sometimes hard to find a site that's protected from the sounds of cars and machinery, but these noisy areas are ideal for teaching lessons about noise pollution. After the children have drawn their maps and shared them, you can ask questions such as:

How many different sounds did you hear?
Which sounds did you like best? Why? Which sounds did you like least? Why? Which sounds had you never heard before? Do you know what made the sounds?



Step 4: Transition to the Stage 3 Activity by saying, *One of the ways we can experience the fauna (animals) of the forest is by listening. Ask students to brainstorm other ways they might look for animal life in a Marsh. What kinds of evidence might they find that would indicate an animals presence?*

*adapted from Joseph Cornell's *Sharing Nature with Children* (1998).

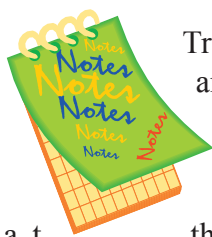
Stage 3: Direct Experience

Activity: FaunaTreasure Hunt

Time: 90 minutes

Materials: copies of the Fauna Treasure Hunt for each student

field notebook
field guides
rulers
hand lenses
colored pencils



a t

their

Treasure hunts are familiar to almost every child and provide a sense of excitement and discovery. This treasure hunt is designed to help students take a closer look the Fauna that can be found in forest habitat.



Step 1: Explain to students they are about to participate in a special kind of treasure hunt. This treasure hunt will give them the opportunity to find out interesting things about the fauna (animal life) that inhabit the forest.



Review yesterdays guidelines with students. Say:
“You will be working in pairs just like you did yesterday. Make sure you have all your necessary equipment. Remember, for each item listed on your Fauna Treasure Hunt list you must show “proof” of finding. Either, sketch a picture or diagram, or collect a sample. You will use your journal to keep a record.”

FOREST/WOODLAND

Remind students of the guidelines for collecting items and to make sure each entry in their journal is clearly numbered and labeled. Students may not have time to find all the items listed. That is OK as long as they are engaged and interested in exploring the forest.



Make sure students understand they are to work with their partner, but not with other pairs.

Step 2: Establish the boundaries for the treasure hunt and a signal that will be used to bring everyone back to a the meeting area. Circulate among the pairs assisting their discovery by questioning. (See Appendix for specific questioning strategies.)



Step 3: About 60 minutes before your Nature Study time is over call everyone back together.

Take a few minutes and to have students share and talk about some of their discoveries. Transition into the Stage 4 Activity by saying, *“When we explore the natural world around us not only do we discover new and exciting things about God’s creation also we discover new and exciting things about God.”*

Fauna Treasure Hunt

Insects

1. Sounds: Listen for three different insect noises, describe each.
2. Look for a flying insect. Follow it. How many times does it land? What does it land on?
3. Find a plant with three different insects on it. Identify these insects.
4. Inspect a patch of grass, look at the earth under the blades of grass to see how many mini-beasts you can find.
5. Look for leaves with holes in them? How did the holes get there?
6. Find a leaf with eggs on the underside.
7. Find an ant. Is it carrying anything? Where is it going?
8. Catch an Insect and put it in a container.
 - What do you notice first? -Can you see wings?
 - Can you see legs? How many pairs do you see?
 - Are all the legs the same length? -Is its shell shiny?
 - Look closely at the eyes, what do you notice?
 - Can you see its mouth parts?
 - Is any part of the insect moving? Which parts?
9. Draw your insect. Use a field guide to identify it.

Animals

1. Find at least one camouflaged animal or insect.
2. Evidence of animals:
 - a hole in the ground. How big is it? How deep? What type of animal might use this hole and what would they use it for?
 - an animal's home -find a path made by animals
 - a piece of fur - a bone -scat
 - an animal track
3. Sit quietly in a camouflaged spot for 15 minutes. Then record what you saw and heard.

Birds

1. Look for birds that:
 - flap their wings a lot, glide as they fly, fly in a flock.
 - hop on both legs, walk or run.
 - climb around on the bark of trees.
 - have long beaks, short beaks, fat beaks.
 - are eating - what are they eating?
 - are cleaning their feathers.
 - are perching on a branch.
 - have brightly colored feathers.
 - are well camouflaged.
2. Sit and listen for bird songs. How many different songs did you hear? Try writing down at least two bird calls.
3. Draw and identify the most interesting bird you have seen today.

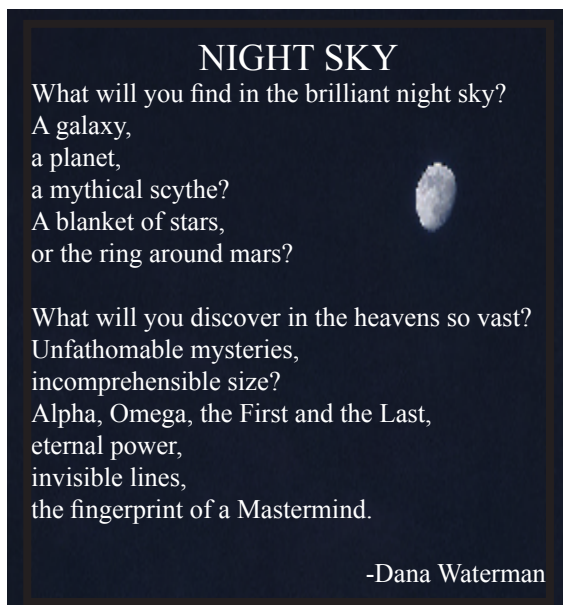


Stage 4: Share Inspiration

Activity: Exploration Poems

Time: 45 mins.

Materials: Large strips of paper



FOREST/WOODLAND

Step 1: Ask students to take a few minutes to reflect on their discoveries and what they tell them about God. Say, “*Today, we will be using the format of a poem to share our experience of studying nature. I will be giving you a model to follow.*” Then share the poem *Night Sky*. Refer students to the poem model at the end of their journals.

Step 2: Compare *Night Sky* with the model and briefly discuss its characteristics. Then give students time to each write their own poems.



Step 3: When students finish provide time and opportunity for those who are willing to share their poems.

Step 4: Transition into the final activity by saying, *“Tomorrow morning we will be sharing with the larger group our discoveries. We want them to get a feel for what we have discovered here in our field. To do that we will be working together to write a group poem, following the format of a poem written by Sgt. Leighton G. Harris (see copy of poem on following page).”*

Step 5: Read this poem to students. Ask them what the first and second stanzas describe? How is the last one different from the first two? Talk about the rhyming pattern. Also point out that most of the lines range between seven and nine syllables.

Step 6: Then explain that each pair of students that worked together on the treasure hunt will be responsible for writing at least two lines of our poem. Hold up the sheet for the group poem composition. Ask students or assign them either a “seeing”, “hearing,” or “feeling” line. Then have each pair work together to come up with a couplet for their section. In order to have enough lines, you may need to assign several couplets to each student. The first lines of each stanza and the last line of the last stanza of your group poem will be filled in after the other lines have been written. Once students have completed their couplets, assemble the groups and have them share their couplets, filling them in on the composition sheet. Have the group work together to fill in the remaining lines of the poem.

Step 7: Once the poem has been composed, read the poem together as a group. (This would also be a time to share your thoughts about the groups experience over the last two days!)

Step 8: Choose one of your students with the best penmanship to copy the poem onto posterboard, back at the camp! Have students decide how the poem will shared tomorrow at worship. Also, you may want to ask some students if they would be willing to share the exploration poems they wrote.

***Note:** If you have some students with extra time- have them work on drawing illustrations to be glued to the poster board.





When you walk through woods I want you
to see

The floating gold of a bumble bee.
Rivers of sunlight, pools of shade,
Toadstools sleeping in mossy jade.
A cobweb net with a catch of dew,
Treetops cones against the blue,
Dancing flowers, bright green flies,
And birds to put rainbows in your eyes

When you walk through woods I want you
to hear

A million sounds in your little ear,
The scratch and rattle of wind-tossed trees,
A rush, a timid chipmunk flees.
The cry of a hawk from the distant sky,
The purr of leaves when a breeze rolls by,
Brooks that mumble, stones that ring,
And birds to teach your heart to sing.

When you walk through the woods I want you
to feel

That no mere man could make this real...
Could paint the throb of a butterfly's wings,
Could teach a woodchuck how to sing,
Could give the wonders of earth and sky;
There's something greater than you or I.
When you walk through the woods and the
birches nod,

Son, meet a friend of mine named *GOD*.
Sgt. Leighton G. Harris





Exploration Poem Model

When you write your poem you will pose the question, “What will you find....?” Think about your discoveries today. You might choose to write a poem about what you would find in a field, or you may choose to narrow it down to something even more specific like the petals of a flower. What ever you choose be creative and have fun! The model which is provided will give you some guidance but you can adapt the structure to better fit your own style.

Here is a model:

What will you find

a _____ ?

b _____

b _____

a _____ (repeat)

NIGHT SKY

What will you find in the brilliant night sky?

A galaxy,
a planet,
a mythical scythe?
A blanket of stars,
or the ring around mars?

What will you discover in the heavens so vast?

Unfathomable mysteries,
incomprehensible size?
Alpha, Omega, the First and the Last,
eternal power,
invisible lines,
the fingerprint of a Mastermind.

-Dana Waterman

FORESTWOODLAND

Group Poem Composition Form

Title _____

When you walk through a field I want you to see

(Filled in by group)

A

A

B

B

C

C

D

D

When you walk through a field I want you to hear

(Filled in by group)

A

A

B

B

C

C

D

D

When you walk through a field I want you to feel

(Filled in by group)

A

A

B

B

C

C

D

D

Child, meet a friend of mine named God.

D

FOREST/WOODLAND

LAKES & PONDS



LAKES/PONDS

Session One
3 hours

Introductions: 15 min.

Stage 1: Webbing 15 min

Stage 2: Succession Crawl &

Sound Maps 50 mins

Stage 3: Treasure Hunt 90 mins.

Stage 4: Share 30 mins.

Session Two
3 hours

Stage 1: Pyramid of Life 20 min

Stage 2: Camera 20 mins.

Stage 3: Lake Zone Exploration
90 mins.

Stage 4: Share 45 mins.



What To Pack

General Supplies:

- Field Guides
- Bible
- Hand lenses
- Butterfly nets, plankton nets, strainer nets
- Rulers and meter sticks
- Colored pencil packs (several small boxes)
- Tape
- Canoes or paddle boats if exploring on the lake/pond
- First aid kit
- Whistle



Lesson Supplies:

- Ball of String
- Rope
- Index cards
- Handkerchiefs for each member of group
- Swim masks (one for every two students in group)
- Photocopies of:

- Treasure Hunts
- Exploration poem model
- Group poem composition form
- Strips of paper
- Animal and plant cards



Student Supplies:

- water
- small notebook
- pencil
- water shoes or boots

Introductions

Time: 15 mins.

Materials: Ball of String

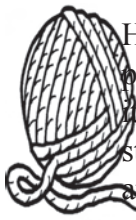


Step 1: Have children form a circle. (Big enough that they will have to toss the ball of string to get it to another person.)

Step 2: Leader stands inside circle, near edge with ball of string.

Say: Since we will be spending some time exploring this lakes/ponds habitat together I would like for us to take a few minutes to get acquainted with each other and to discover how we are all connected. To begin I would like each of you to introduce yourself by telling us your name and the school you attend. Start by introducing yourself and then tossing the ball of string to another student.

Once everyone has introduced themselves and they are all holding a section of the string, Say: *You can see that we are all connected together right now physically by this string. But we are also connected because we all attend schools that are part of the (-----) Conference and participate in outdoor school. I imagine there are many other ways in which we are connected. But before we can discover these we need to unravel ourselves.*



Have students reverse the process. The last person holding the ball of string should toss it back to the person who threw it to them, stating their name and the school which they attend.

Step 3: To help student's discover some other ways in which they are connected, ask them to think of something about themselves they would like to share with the group. Perhaps, they enjoyed learning how to waterski this summer. Once a student has shared, then ask the other students if anyone else in the group can connect with that interest. For instance, someone else may have enjoyed water skiing also over summer, or some water play activity. They would then ask that person. The person who receives would then share something about it to someone else who is able to. Continue, until all students are connected by the string. If a student has difficulty identifying a connection, in the group learned to help students generalize by saying, *"Did anyone participate in any kind of water sport activities this summer?"* If necessary, ask the student to share something else about themselves.



Step 4: Close by saying, *"I hope everyone will discover many more ways in which we are connected as we interact with each other over the next few days."* Remind students that we are all connected through Jesus.



Step 5: Transition into the Stage 1 Activity by explaining to students that we are going to use this same idea to discover how things in the lakes/ponds habitat which we will be exploring are connected to each other.

Stage 1: Awaken Enthusiasm

Activity: Webbing

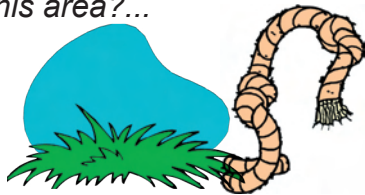
Time: 15 mins.

Materials: Ball of String



Here is a game that will make clear the interrelationship among all the members of your lake habitat. This webbing activity vividly portrays how air, rocks, plants and animals function together in a balanced web of life.

Step 1: Have children form a circle. The leader stands inside the circle near the edge, with a ball of string: *"Who can name a plant that grows in this area?... algae...Good. Here, Miss Algae, you hold the end of the string. Is there an animal living around here that might eat the algae?...fish? ...Ah, a sumptuous meal. Mr. Fish, you take hold of the string here; you are connected to Miss Algae by your dependence on her for your lunch. Now, who needs Mr. Fish for his lunch?"*



Step 2: Continue connecting the children with string as their relationships to the rest of the group emerge. Bring in new elements and considerations, such as other animals, soil, water, and so on, until the entire circle of children is strung together in a symbol of the web of life. You have created your own ecosystem.

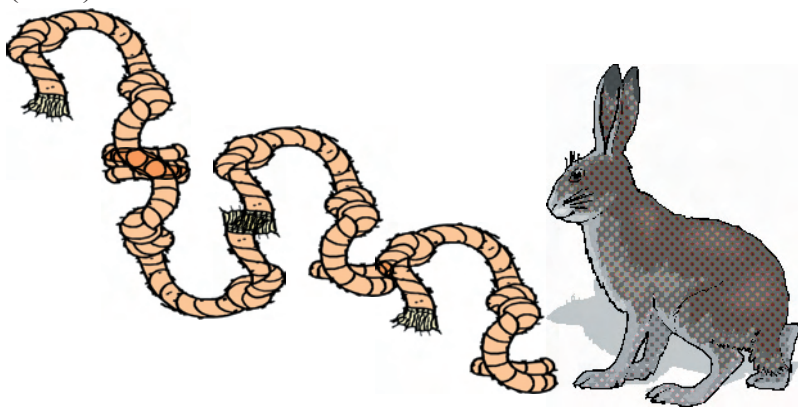


Step 3: To demonstrate how each individual is important to the whole community, take away by some plausible means one member of the

web. For example, a pollutant kills the algae or over fishing occurs. When the algae gives a tug, the process continues until every individual is shown to be affected by the destruction of the algae.

Step 4: Discuss with students the importance of being respectful of the lake habitat as they explore. Say, *"It is important to remember we are entering someone else's home and what we do there will affect the inhabitants."* Solicit ideas from the students as to how they should conduct themselves in a respectful way in the lake. (See Guidelines for a Naturalist next page).

*adapted from Joseph Cornell's *Sharing Nature with Children* (1998).



Notes

Stage 2: Focus Attention

Activity: *Succession Crawl

Time: 30 mins.

Plant succession is the process by which soil and water conditions of an area gradually change, allowing new species to come in and eventually establish themselves, and forcing old species to migrate to more favorable conditions. A very good place for observing plant succession is the area close around a pond, especially if there is a gentle slope running up away from the water. As you move farther away from the center, the soil becomes drier and its composition changes. You will be able to observe several plant types in successive rings around the pond.



LAKES/PONDS

Step 1: Have children crawl from the outside rings toward the edge of the water. By crawling and closely examining the ground, they will get a feeling for the different soil conditions needed by the different types of plants in the rings.

Step 2: Ask the children to share their discoveries as they find them. One discovery might be coming across a new ring with its special kinds of trees, shrubs, plants, grasses, or wetter and stronger-smelling soil.

Step 3: When the child reaches the water, have them draw a map of the successive circles of plant life. Label each ring from the wettest to the driest, and list the kinds of plants that grow there.

Step 4: Once the group has come back together, have students share their experiences. Ask them what was difficult about this activity, what was surprising to them.

Step 5: Transition into the second Stage 2 activity by saying, *“Our next activity will help us picture the lake in a different way. It will require that we develop a keen sense of hearing.”*

*adapted from Joseph Cornell's *Sharing Nature with Children* .



Stage 2: Focus Attention

Activity: *Sound Maps

Time: 20 mins.

Materials: index cards



The drumming of a woodpecker. Wind rushing and roaring through the tree tops. The flute-like call of a hermit thrush. The “buzz” from a nearby humming bird. Water cascading and singing down a steep, rocky incline. A thrilling chorus of natural sounds delights the players in the Sound Map Game. children love this activity-they become completely absorbed and sit surprisingly still while making their sound maps.



Step 1: To play, begin by showing the group a 4x6 index card with an X in the center. Tell the players the card is a map, and that the X shows where they’re sitting. When they hear a sound, they should make a mark on the card that aptly describes the sound. The mark’s location should indicate as accurately as possible the direction and distance of the sound. The marks should be interpretive, not literal: the players don’t have to draw pictures of plants and animals, just a few lines that represent sound-for example, two wavy lines indicating wind, or a musical note indicating a song bird. in other words, they should spend little time drawing and most of the time listening.

Step 2: Tell the players to keep their eyes closed while they listen. Explain that cupping their hands behind their ears provides a reflective surface for catching sounds, creating a shape like the sensitive ears of a fox or kangaroo. To hear sounds behind them, they needn’t turn their heads, but just cup their hands in front of their ears.



LAKEs/PONDs

Step 3: Select a site where the group is likely to hear a variety of sounds. It's important to have everyone find a special "listening place" quickly, so that some aren't walking around while others are already listening. It is helpful to give the group one minute



to find a spot and tell them to stay in the same spot until the end of the game. Giving the players enough time to disperse fairly widely will ensure a diversity of sound maps and greater interest in sharing.

How long you should play depends on the group's age, attention span, and how well-supplied the environment is with sounds. A good basic guideline is 10 minutes for adults 5-10 minutes for children. Try calling the group back together by imitating a natural sound. As the players assemble, ask them to share their maps with a partner.

It's sometimes hard to find a site that's protected from the sounds of cars and machinery, but these noisy areas are ideal for teaching lessons about noise pollution. After the children have drawn their maps and shared them, you can ask questions such as:

How many different sounds did you hear?
Which sounds did you like best? Why? Which sounds did you like least? Why? Which sounds had you never heard before? Do you know what made the sounds?



Step 4: Transition to the Stage 3 Activity by saying, *One of the ways we can experience the lake habitat is by listening. Ask students to brainstorm other ways they explore and experience the Lake. Explain that in the next activity they will be using all of their senses as they explore the lake habitat.*

*adapted from Joseph Cornell's *Sharing Nature with Children* (1998).

Stage 3: Direct Experience

Activity: Flora and Fauna Treasure Hunt

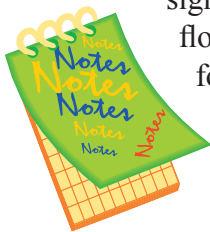
Time: 90 minutes

Materials: copies of Treasure Hunt for each student

- field notebook
- field guides
- rulers
- hand lenses
- colored pencils



Treasure hunts are familiar to almost every child and provide a sense of excitement and discovery. This treasure hunt is designed to help students take a closer look at the flora (plant life) and fauna (animal life) that can be found in their lake/pond habitat.



Step 1: Explain to students they are about to participate in a special

kind of treasure hunt. This treasure hunt will give them the opportunity to find out interesting things about the flora (plant life) and fauna (animals) that inhabit the lake/pond.



Say: *"You will be working in pairs and each pair will need to have a set of colored, pencils, hand lense, scissors, tape, and two notebooks. For each item listed on your Flora and Fauna Treasure Hunt list you must show "proof" of finding. Either, sketch a picture or diagram, or collect a sample. You will use your journal to keep a record."*

Remind students of the guidelines for collecting items. Explain that in some cases they will be asked to identify certain objects and that they may use the field guides in the backpack provided for your group.

LAKEs/PONDs



Let students know they do not have to complete the treasure hunt in the order listed, but they should make sure each entry in their journal is clearly numbered and labeled. Students may not have time to find all the items listed, that is o.k. as long as they are engaged and interested in exploring the marsh.



Make sure students understand they are to work with their partner, but not with other pairs.

Step 2: Establish the boundaries for the treasure hunt and a signal that will be used to bring everyone back to a the meeting area. Circulate among the pairs assisting their discovery by questioning. (See Appendix for specific questioning strategies.)

Step 3: About 35 minutes before your nature study time is over call everyone back together. Ask students to share their most interesting discovery and why they found it interesting. Transition into Stage 4 Activity by saying: *Because all things in the natural world were created by God they give us a little glimpse of who God is, His character and personality and divine qualities.*



Notes

Treasure Hunt

LAKES/PONDS

1. One seed dispersed by the wind.
2. Exactly 100 of something.
3. A thorn or thistle.
4. Three kinds of seeds.
5. One camouflaged insect or animal.
6. Something round.
7. Part of an egg.
8. Part of a shell.
9. Something fuzzy.
10. Something sharp.
11. Something perfectly straight.
12. Something beautiful.
13. Something squishy.
14. Something decomposing.
15. Two different kinds of spider's webs.
16. A web that has something caught in it.
17. Something that makes a noise.
18. Something white.
19. Something important in nature.
20. Something soft.
21. Something slippery.
22. A suntrap.
23. Catch and identify two different kinds of water insects.
24. Find a reptile or amphibian.
25. Something that can be found above the water.
26. Something that can be found under the water.
27. Something that reminds you of yourself.
28. Catch, identify, and release a fish.
29. Something that changes.
30. Something that makes you smile.



Stage 4: Share Inspiration

Activity: Understanding what we don't see.

Time: 30 Minutes

Materials: Bible



“There are things about God that people cannot see - his eternal power and all the things that make him God. But since the beginning of the world those things have been easy to understand. They are made clear by what God has made.” Romans 1:20 ICB

“The heavens tell the glory of God. And the skies announce what his hands have made.” Psalm 19:1 ICB

Step 1: Read and discuss Romans 1:20 and Psalm 19:1.

Step 2: Say, *“I want to go around the circle and have you share how your discovery (the one they shared at the end of stage three) speaks of God’s glory. What does it help us to better understand about God?”* Also, explain that you want them to make a personal application by thinking about and answering the question, *How can I apply this knowledge of God to my own life.* Give students time to think about their responses. Also if necessary, help a student out by brainstorming ideas as a group. (See Examples at end of lesson.)

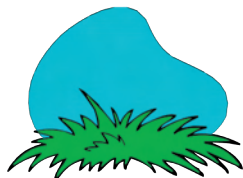


Step 4: Close by challenging kids to notice the natural world around them at home, at school, or wherever they are and to look for evidence of who God is.

LAKEs/PONDs

Examples:

The web of a spider show's me God is a designer.... He has a plan for my life.



The thick matted roots of the grass reminds me that in order to grow tall and strong as Christians we need to have a root system imbedded in the Water of Life....

All the different kinds of flowers with their different shapes, sizes, and colors tell me that God loves variety and individuality. He created me to be a unique individual with special abilities that I can use to bring glory to him.

**Notes**

Stage 1: Awaken Enthusiasm

Activity: *Pyramid of Life

Time: 20 mins

Materials: Plant and animal cards

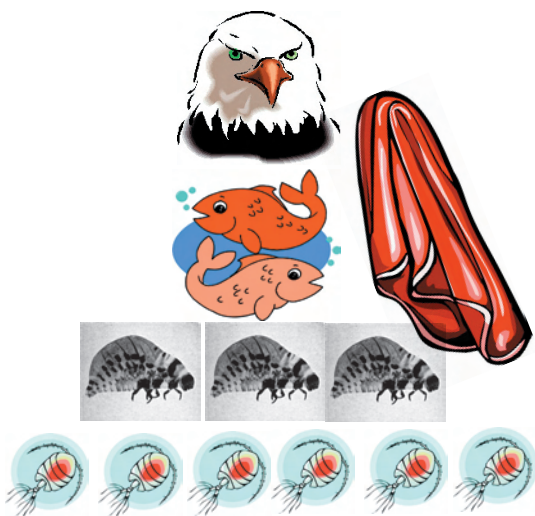
This game requires at least six players.

One Handkerchief for each child.



Step 1: Give each child a slip of paper that has on it the name of a plant or animal that lives in the area. The players are going to build a pyramid.

Step 2: Say, *I'd like everyone who can make food from the sun, air, water, and trace minerals to come forward and kneel in a long line.... Would all the plants please introduce themselves?....*



(The plants respond by stating their plant names.) *Now herbivores, please come and stand behind the plants. Tell us who you are... If you are a predator, make a third row and identify yourselves.... Is there anyone who lives at the very top of the food chain? Yes? please tell us who you are? A bald eagle.... then come and be the fourth row.*

LAKES/PONDS



Step 3: Explain to the group that there is a model in science that says that everytime you go from one level to a higher one (i.e. plants to herbivores), only 1/10 of the biomass is retained. So for example, if you have 1,000 pounds of plants, you'd have 100 pounds of herbivores, 10 of predators, and one of the top predator.



Step 4: Now tell the group: *There is a farmer who sprays pesticides on his fields right above the lake. When it rains these poisons run of into the lake. These scarfs that that I'm putting on your heads - one per plant signify a particle of this treated waste.. Now I'd like the herbivores to reach down and eat the plants. You do this by taking the plant's scarf and putting it on the top of your head. Keep eating until all the plants are eaten.*

"Poisons like herbicides and pesticides are dangerous to animals because when they're digested the poison stays in the animal's tissue. Let's now have the predator's eat the herbivore's...(By now the players see where the game is going and are greatly anticipating what will happen when all the scarf's reach the fourth row. "Now would the bald eagle eat the animals in the third row? The bald eagle player now wears a large pile of scarfs as a hat.

"As we go higher up the food chain, more and more poison concentrates in the tissues of the animals. This process is called biological magnification. Birds like eagles, peregrine falcons, and pelicans and other animals, too, have been greatly harmed by poisons in the environment... Where do you, as a human, fit into the food chain?"



LAKES/PONDS

*adapted from Joseph Cornell's *Sharing Nature with Children* (1998).



**ZOOPLANKTON
I**

**ZOOPLANKTON
I**

**BACTERIA and
FUNGI 1**

**BACTERIA and
FUNGI 1**

**BLACK FLY
LARVA II**

**BLACK FLY
LARVA II**

**BACTERIA and
FUNGI 1**

**ZOOPLANKTON
I**

**ZOOPLANKTON
I**

LAKES/PONDS



**SNAIL CASE CADDIS-
FLY LARVA
II**

FISH III

FISH III

BALD EAGLE IV

**SNAIL CASE
CADDISFLY LARVA
II**

ZOOPLANKTON I

LAKES/PONDS



Stage 2: Focus Attention

Activity: *Camera.

Time: 30 mins.

Materials: goggles- if you want to take under-water pictures



In this activity one player takes the role of photographer, and the other plays the camera. The photographer guides the camera, who keeps his eyes closed, on a search for beautiful and interesting pictures. When the photographer sees something he likes, he points the camera's lens (eyes) at it framing the object he wants to "Shoot" Then he presses the shutter button (see below) to open the lens.

It's important that the camera keep his eyes closed between pictures, so that the 3-to- 5-second "exposure" will have the impact of surprise. to be creative in pictures. Tell stunning photo-form unusual For example, you tree and take your or you can put to a tree's bark or into a flower, or open to the opportunities of the moment.



Encourage photographers choosing and framing them, "You can make graphs by taking shots angles and perspectives. can both lie down under a picture looking upward, your camera very close leaves. Try looking down panning a horizon. Be

LAKES/PONDS

The children press the "shutter button" by tapping the camera's shoulder. A second tap tells the camera to close his eyes. For the first picture, it may help to say "Open" with the first tap, and "Close" with the second. The preferred "exposure time" is three to five seconds. With longer exposures, the camera's mind begins to wander, reducing the impact of the picture - just as too much light overexposes real film.





Show the players how to pan the camera-- i.e., move it slowly with the shutter held open, like a movie camera. While

panning, they may keep the shutter open longer than five seconds, since the element will hold the rest. Suggest that they cally-- for example, and slowly moving up

move-camera's inter-also pan verti-starting at the base of a tree the trunk to the highest branches, then into the sky.



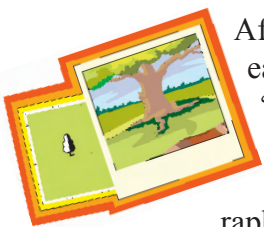
The photographers can prepare their cameras for the next picture by telling them which lens to use. For a picture of a flower, tell the camera to choose a close-up lens; for a sweeping scenic panorama, a wide angle lens; and for a far-away object, a telephoto lens. Take time to talk to the group about the elements of creative and beautiful pictures - otherwise they may end up with pictures of deer scat or the insides of trash cans! This is especially important with small children. It's also very important to encourage the photographers and cameras to talk only when it's unavoidable. Explain that silence creates pictures that have greater impact for the camera.

You may need to take time to show the group how to guide their "blind" cameras sensitively and protectively by holding the camera's hand and gently pulling an arm in the direction you want to go.



Tell the photographers they'll have about 10 minutes to take pictures, then they'll trade roles. It works well to tell the photographers to take a certain number of pictures (six to 10 is fine), then trade places with their partners. With these rules, everyone will finish at about the same time.

LAKES/PONDS



After everyone has played both roles, give each player a 3 X 5 card and tell them, “Remember one of the pictures you took when you played camera. Develop it by drawing it, and give it to the photographer.” If some players groan self-consciously about their lack of artistic talent, tell them they can blame the quality of the pictures on the photographer!

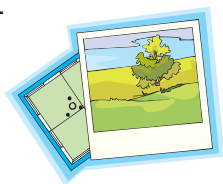
The goal of the game is to give the players a more lively appreciation of nature’s beauty. You can extend the game by asking the group to write about their pictures. You might also have the photographers take 8-10 pictures on a single theme: plant succession, animal homes, underwater scenes, lakescapes for instance. The camera can then write a story in which he must use all the pictures. Afterwards, the photographer can discuss their stories.



Step 1: Explain activity to students. Pair up students as camera/photographer partners.

Step 2: Establish the boundaries for this activity. Agree upon a signal for switching and for ending the activity.

Step 3: Once students reassemble have them draw their picture. Then spend a few minutes having students share their experience. How did it feel to be a camera!? What surprised them about this activity? Did they prefer being the photographer or the camera? How did they decide what would make a good picture? etc....



Step 4: Transition into the Stage 3 Activity by saying today during our exploration activity we will be taking some close ups in four specific areas that make up the lake habitat.

*adapted from Joseph Cornell’s *Sharing Nature with Children* (1998)

Stage 3: Direct Experience

Activity: Lake Zone Exploration

Time: 90 minutes

Materials: copies of the Fauna Treasure Hunt for each student: field notebooks, meter sticks, canoe or paddleboat, field guides, plankton nets, rulers, strainer nets, hand lenses, secchi disc, colored pencils, deep water sampling bottle. (See directions for making instruments at the end of the lesson).



During this activity, students will be exploring four specific lake zones; the water's edge, the surface film, the open water, and the bottom. Using the survey form, they will perform a series of tasks that will help them sample the life forms and living conditions in each zone. You will need to divide your group into four smaller groups, each group will rotate through all four lake zones.



Before this activity, prepare by identifying the four zones that will be explored. If you have some nylon rope and a few milk jugs you can mark out a one meter square area for the surface film, open water, and bottom zones. Use some string or rope on the ground for the water's edge zone. However, if you don't have the milk jugs and rope, simply designate specific boundaries for each zone using natural landmarks. (Between the big rock and the fallen tree, no farther than the grass line.)

Step 1: Begin by having students suggest the types of zones a lake habitat could be divided into, or identify

the specific components in a lake habitat. Say to students, “*During the next hour we will be looking real close at four specific zones; the waters edge, the surface film, the open water, and bottom zones. You will rotate the different zones spending about 15 minutes in each one completing a survey form that will help you sample the life forms and living conditions in each zone.*”

Step 2: Hand out forms and go over them with students making sure they understand what they are being asked to do. Have students tape the survey forms into their journals. You will probably need to explain the following terms:

Turbidity: Indicates the degree of light penetration through water; it is a measure of the amount of living and non- living suspended solids, as well as dissolved elements that impart color to the water.

Secchi Disc: (Seh. key) An instrument used to measure the light penetration.

Deep Water Sampling Device: An instrument that can be used to take deep water samples.

Plankton Net: An instrument made up of a fine net and nylon rope, used to get samples of plankton by dragging it through the water. Invert into a pan of water and gentle swishing the plankton free.

You may also want to discuss how to measure the temperature of water using the thermometers, as well as clarify exactly what they would need to do when drawing a food web.

Step 3: Divide group into four smaller groups and assign them a starting zone. Make sure everyone is clear about how they are to rotate through the zones. Also, you should establish a signal for switching. (A five minute warning, and then a switch signal.) Allow groups about 15 to 20 minutes per zone.

Step 4: While groups are waiting for all members to come back from the zones have them work on finishing the food webs for each zone. With the whole group discuss what they found in the zones. Refer back and tie in concepts learned in previous activities. If time allows work as a group to construct a food web that encompasses all the lake zones.



Lake Zone Exploration

The Waters' Edge

Measure, describe, and record the following:

1. air temperature: _____
2. soil temperature: _____
3. water temperature: _____
4. water depth: _____
5. Identify and count all the plants and animals you can.
6. Create a food web diagram for this zone.

The Surface

Measure, describe, and record the following:

1. air temperature: _____
3. water temperature: _____
4. Identify and count all the plants and animals you can. (use strainers and plankton nets)
6. Create a food web diagram for this zone.

LAKES/PONDS



Lake Zone Exploration

The Open Waters

Measure, describe, and record the following:

1. air temperature: _____
2. soil temperature: _____
3. water temperature: _____
 -surface _____
 -bottom _____
4. water depth: _____
5. turbidity: _____
6. Identify and count all the plants and animals you can.
7. Create a food web diagram for this zone.

The Bottom

Measure, describe, and record the following:

1. soil temperature: _____
2. water temperature: _____
3. water depth: _____
4. Identify and count all the plants and animals you can.
5. Create a food web diagram for this zone.

LAKES/PONDS



A Secchi Disk is Used to Measure Water Clarity

Wildlife: June, 2002

June, 2002 Table of Contents

Other Wildlife Articles

<http://www.noble.org/Ag/Wildlife/SecchiDisk/Index.htm>

by Mike Porter

Appropriate water quality is fundamentally important for fish and aquatic plants, and muddy water limits production of both. Ideal clarity for large-mouth bass and bluegill production in ponds without substantial vegetation is 12- to 30-inch visibility, with primarily phytoplankton turbidity. Turbidity is cloudiness caused by suspended or dissolved material. Sport fish also perform well in clearer water when substantial aquatic vegetation is present. Ideal clarity for aquatic plant production is generally greater than 36-inch visibility.



figure 1: Secchi Disk in use

Standardized measurement of water clarity helps monitor changes and communicate these changes to others. A Secchi disk (Figure 1) is a simple, standard tool used to measure water clarity. It is an 8-inch (20 centimeter) diameter, black and white disk attached to a dowel rod, PVC pipe, rope or chain. Inch or centimeter intervals are marked on the rod, pipe, rope or chain with permanent ink, paint or clamps. Secchi disk measurements tend to be easier and quicker using a rod or pipe versus a rope or chain, except when water is very clear. Very clear water may require an excessively long rod or pipe. To obtain a measurement, the disk is lowered into the water while observing the depth at which it disappears. It is lowered some more and then raised while observing the depth at which it reappears. The Secchi disk measurement is the average of the two observations. The date, Secchi disk measurement and source of turbidity should be recorded each time water clarity is measured. Sources of turbidity are usually sediment (brownish muddy color), phytoplankton (greenish color), humic

stain (tea color from decaying leaves or plants) or some combination of these. Secchi disk measurements are most accurate when taken on relatively calm, sunny days during the middle of the day from a dock or some type of floating device such as a boat, float tube, air mattress or life preserver.

Secchi disk measurements provide objective means to evaluate water clarity versus subjective statements such as “It is clear,” or “It is muddy.” One person’s clear water may be another person’s muddy water. Regularly recording Secchi disk measurements indicate water clarity trends before and after management. They help monitor management success and can be useful for determining whether and when any additional treatments are necessary.

Examples of management to reduce muddiness of water include fencing to exclude livestock, bullhead control, planting aquatic vegetation, fertilization, alum application and gypsum application. When trying to monitor water turbidity changes, Secchi disk measurements should begin prior to such treatments and be measured at least monthly or quarterly until clarity improves satisfactorily.

© 1997-2005 by The Samuel Roberts Noble Foundation, Inc.

How To Make Your Own Secchi Disk

Step 1: You will need a 20 cm diameter circle made out of wood, metal, or plastic. I suggest finding a plastic lid such as a belongs to a butter or cool whip container.

Step 2: Divide the lid into fourths and paint it black and white.

Step 3: Punch a hole in the middle of the disk and attach a long rope.

Step 4: Weight the bottom of the disk by tying metal washers to the underside.

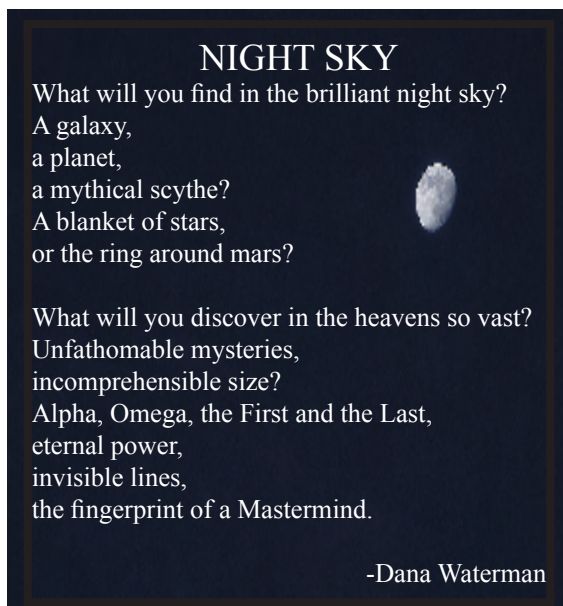


Stage 4: Share Inspiration

Activity: Exploration Poems

Time: 45 mins.

Materials: Large strips of paper



LAKES/PONDS

Step 1: Ask students to take a few minutes to reflect on their discoveries and what they tell them about God. Say, “*Today, we will be using the format of a poem to share our experience of studying nature. I will be giving you a model to follow.*” Then share the poem *Night Sky*. Refer students to the poem model at the end of their journals.

Step 2: Compare *Night Sky* with the model and briefly discuss its characteristics. Then give students time to each write their own poems.



Step 3: When students finish provide time and opportunity for those who are willing to share their poems.

Step 4: Transition into the final activity by saying, *“Tomorrow morning we will be sharing with the larger group our discoveries. We want them to get a feel for what we have discovered here in our field. To do that we will be working together to write a group poem, following the format of a poem written by Sgt. Leighton G. Harris (see copy of poem on following page).”*

Step 5: Read this poem to students. Ask them what the first and second stanzas describe? How is the last one different from the first two? Talk about the rhyming pattern. Also point out that most of the lines range between 7-9 syllables.

Step 6: Then explain that each pair of students that worked together on the treasure hunt will be responsible for writing at least two lines of our poem. Hold up the sheet for the group poem composition. Ask students or assign them either a “seeing,” “hearing,” or “feeling” line. Then have each pair work together to come up with a couplet for their section. In order to have enough lines, you may need to assign several couplets to each student. The first lines of each stanza and the last line of the last stanza of your group poem will be filled in after the other lines have been written. Once students have completed their couplets, assemble the groups and have them share their couplets, filling them in on the composition sheet. Have the group work together to fill in the remaining lines of the poem.

Step 7: Once the poem has been composed, read the poem together as a group. (This would also be a time to share your thoughts about the groups experience over the last two days!)

Step 8: Choose one of your students with the best penmanship to copy the poem onto posterboard, back at the camp! Have students decide how the poem will shared tomorrow at worship. Also, you may want to ask some students if they would be willing to share the exploration poems they wrote.

***Note:** If you have some students with extra time- have them work on drawing illustrations to be glued to the poster board.





When you walk through woods I want you
to see

The floating gold of a bumble bee.
Rivers of sunlight, pools of shade,
Toadstools sleeping in mossy jade.
A cobweb net with a catch of dew,
Treetops cones against the blue,
Dancing flowers, bright green flies,
And birds to put rainbows in your eyes

When you walk through woods I want you
to hear

A million sounds in your little ear,
The scratch and rattle of wind-tossed trees,
A rush, a timid chipmunk flees.
The cry of a hawk from the distant sky,
The purr of leaves when a breeze rolls by,
Brooks that mumble, stones that ring,
And birds to teach your heart to sing.

When you walk through the woods I want you
to feel

That no mere man could make this real...
Could paint the throb of a butterfly's wings,
Could teach a woodchuck how to sing,
Could give the wonders of earth and sky;
There's something greater than you or I.
When you walk through the woods and the
birches nod,

Son, meet a friend of mine named *GOD*.
Sgt. Leighton G. Harris



LAKES/PONDS



Exploration Poem Model

When you write your poem you will pose the question, “What will you find....?” Think about your discoveries today. You might choose to write a poem about what you would find in a field, or you may choose to narrow it down to something even more specific like the petals of a flower. What ever you choose be creative and have fun! The model which is provided will give you some guidance but you can adapt the structure to better fit your own style.

Here is a model:

What will you find

a _____?

b _____

b _____

a _____ (repeat)

NIGHT SKY

What will you find in the brilliant night sky?

A galaxy,
a planet,
a mythical scythe?
A blanket of stars,
or the ring around mars?

What will you discover in the heavens so vast?

Unfathomable mysteries,
incomprehensible size?
Alpha, Omega, the First and the Last,
eternal power,
invisible lines,
the fingerprint of a Mastermind.

-Dana Waterman

LAKES/PONDS

Group Poem Composition Form

Title _____

When you walk through a field I want you to see

(Filled in by group)

A

A

B

B

C

C

D

D

When you walk through a field I want you to hear

(Filled in by group)

A

A

B

B

C

C

D

D

When you walk through a field I want you to feel

(Filled in by group)

A

A

B

B

C

C

D

Child, meet a friend of mine named God.

D

LAKES/PONDS

APPENDIX



APPENDIX



Teaching Strategies

Outdoor education necessitates the use of teaching methods that encourage learning by exploration, problem solving and direct experience. Joseph Cornell (1998), a naturalist and nature educator, believes the most stimulating classroom is the outdoor environment. “This classroom is equipped with expandable walls that extend as far as the learner’s legs want to carry him, and a floor that varies from locale to locale-- sometimes rocks, or water, sometimes forest floor. Its ceiling, too, is varied with ever changing cloud shapes, or at night with a myriad of star patterns waiting to be explored. No schoolroom ever had the books or maps or charts to rival the vividness of the real world” (p. 2).

The whole idea of having a nature studies program involves a shift not only in the location of the learning environment, but also in the strategies and methods of teaching. The following are a few simple guidelines that nature educators have found to be effective in helping kids explore nature.

1. Teach less, and share more. We are told that telling is not teaching yet we insist on drowning the learner in a sea of words. There needs to be a focus on the experience, drawing children’s attention to many new things in their world and interesting them in nature, rather than expecting them to memorize long lists of trees and plants. That kind of learning is more meaningful when it emerges out of direct experience stimulated by the child’s own curiosity. The outdoor educator must be alert to the child’s interests and reactions adapting lessons to meet capitalize on these interests. The philosophy being that you can plan what activities a child will do, but you can not always plan what a child will learn from the experience. This is not to say that one should have an overall goal in mind; but the idea of exploring nature should focus on discovery through investigation and inquiry.



2. Be receptive. Listen and be aware both to the moods and feelings of the children and to what is happening in nature around you. Share with students your own sense of wonder and awe at what you observe. When we share with students our own ideas and feelings it encourages them to explore their own feelings, and perceptions therefore creating between student and teacher a mutual trust and friendship.

3. Focus the child's attention without delay. The instructor or facilitator must set the tone of the outing, making it a point to include everyone by asking questions and pointing out things of interest. Hammerman and Hammerman (1973) point out how children are naturally curious and for the inquiring mind of a child the quest for the what, the how, and the why of the world's mysteries can be an exciting adventure in learning. A teacher doesn't have to know all the answers: they just need to know how to use children's questions to help them look more carefully. The teacher learns in cooperation with the student, and together they look for explanations to the mysteries found in nature. This method of exploratory learning is ideally suited for nature studies. Its basic premise is to involve the learners in finding out for themselves by asking their own questions and seeking their own answers.

4. Look and experience first: talk later. The order of these activities is important, often we spend a lot of time talking and explaining the activities so that little time is left to do the activity. The act of teaching in nature necessitates involving students in solving the mysteries of the natural world through exploration which involves all of the senses. Reflection on these experiences is essential and helps to make the outdoor experience richer and more meaningful, but it must come after the experience. It is difficult to reflect on what we have not seen or experienced; neither can we fully appreciate nor understand what we have seen without reflecting on it.



Students derive greater meaning, substance and growth from their experiences when they spend time actively reflecting upon them.

5. A sense of joy should permeate the experience. Outdoor educators need to help students discover the joy and fun that can be had in the outdoors, the possibilities for imagination, the exhilaration and mental sharpness that comes from physical exertion and the fresh air. Experiences should not be so structured as to stifle student's ability to explore, but skillfully guided so as to open up new possibilities and discoveries which otherwise might go unnoticed.

6. Use questions to engage the learner. At the heart of an inquiry-based approach to outdoor education is the art of questioning. Good questions keep students engaged and involved in putting the pieces of the puzzle together. They involve both the student and the teacher in the learning process together as partners. The use of questions by the teacher helps the student accumulate evidence to be analyzed, sifted, and refined into basic concepts which lead to further broad generalizations. Through skillful questioning the student is lead to see, to think about what has been observed, to integrate and synthesize the important elements derived from the observations until a reasonable conclusion as to what happened can be formulated.



The following dialogue between a student and teacher helps to illustration of how the perplexity of a learner and the skillful questioning of a teacher can help put the pieces of a puzzle together in an interesting and exciting way.

Pupil: Wow, Mr. C., look what I've found! What is it?

Mr.C: Well, I don't know for sure. Let's take a closer look at it. (Mr. C. knows, he just isn't saying.) Here, look at it under this magnifying glass. What do you see?

Pupil: Well, I see a shell. It looks like a clam shell.

Mr. C: Look again. Is it actually a shell?

pupil: Wow! There's no shell material. It's just an imprint on this rock. I wonder how it got there.

Mr.C: What else do you see?

Pupil: I see a lot of small grains.

Mr.C: What do they look like to you?

Pupil: It looks like cement, or sand maybe.

Mr.C: Here, let's scrape a little off with my knife. Now feel this. What does it feel like?

Pupil: It feels like sand. Yes, it's sand all right. This must be sandstone. I still wonder, though, how the shell imprint got in the stone. It must have taken tremendous pressure.

Mr.C: Yes, you're right. Let's pursue this a little bit further to see if I can help you figure out the rest of the puzzle. Where do you ordinarily find shells?

Pupil: Oh, along the beach. We go to Wildwood, New Jersey, each summer, and I've found loads of shells. In fact some of them even look like this one.

Mr.C: All right, now give this careful thought. See if you can use all the evidence we have thus far to solve this mystery. There once was a shell and now it is gone, but we have a clue in this fossil. What happened here?

Pupil (after considerable head scratching and brow wrinkling): Well, here's what I think happened. Shells are found by the shore, and the waves wash them back and forth.



Sometimes they're washed up on the shore, and some shells are washed back out to sea. I've watched the sand wash over the shells at the beach. I've seen some shells sort of burrow down into the sand, too. After a while more sand would settle to the bottom and cover the shells, and over time the sand and anything in it would gradually turn into stone.

Mr.C: You're doing fine so far, but what happened to the shell itself?

Pupil (who by now is completely caught up in the process of trying to solve the mystery):

Well, some of the shell would wear away from the sand rubbing against it. This would be like rough sandpaper wearing it down. I think, too, that the shell might be composed of something that dissolves in sea water.

material presented in the guidelines was adapted from :

Cornell, J. (1998). Sharing nature with children. Nevada City, CA: Dawn Publications.
Hammerman, D. & Hammerman, W. (1973). Teaching in the outdoors. Minneapolis, MN: Burgess Publishing Company.



Your Role As Coach

How To Ask The Right Questions

Your role as coach for these studies is to assist your students in guided discovery, helping them use their senses to collect data, develop ideas and test them through scientific method, and make their own discoveries. It is important that the emphasis be placed on the process of investigating and working out their ideas, rather than memorizing a specific set of facts.

The most important instructional strategy for these studies is the use of questioning strategies. Freedman (1994) defines six types of questions:

- *Description questions* encourage students to use their senses (e.g. What does it feel like? What does it smell like?)
- *Comparison questions* encourage students to compare and contrast different things (e.g., What is the difference between...? What do you see that is the same between...?)
- *Analysis questions* encourage students to describe what something is and isn't (e.g., Can you tell me about what you found? What didn't you find that you thought you might?)
- *Problem-Solving questions* provide opportunities to describe a problem, propose a solution, and convince a group that it is reasonable and feasible (e.g., What if...? What is the problem? How might you solve it? Why do you feel your hypothesis would work?)
- *Fiction questions* ask students to synthesize information in an imaginary context (e.g., If you were... What would you do?)
- *Evaluation questions* focus on supporting evidence, facts, expert opinion, or research (e.g., How do you know...? What evidence do you have that supports your hypothesis?)



Making It Work For You

If your school does not currently participate in an outdoor school and you would like start one up, here are some things to think about.

1. Who would be involved? Would it be one or two schools or an entire conference? What grade levels would participate?
2. Will it be a one day event? Two or three days? or more? Will it be held yearly or every (x) number of years.?
3. Where should it be held? When deciding on a location and facilities consider length of stay, number of students who will participate, accessibility of natural habitats and outdoor recreational activities.
4. Time of year. If you live in a climate which has extreme temperatures you have to plan for a time of year when students could be outdoors in relatively comfortable temperature.
5. Cost. Will students have to pay a fee to attend? If so, how much? Food and lodging will obviously be your biggest expenses, but you really can conduct an outdoor school program on a modest budget. This would be especially true if your conference owns a summer camp which would meet your lodging and outdoor needs. Most kids aren't real hip on complicated foods, so keeping your menu simple, ie. spaghetti, salad, garlic bread, or mac and cheese, will keep your food costs down.
6. What will your program look like? Once you know how much time you have and where you will have the outdoor school you can develop a program. Make sure your program will really get your students out and experiencing the wonderful outdoors. We have found that when running an outdoor school that spans several days it is helpful to incorporate some of the elements you might find in



a summer camp program, such as, lodging inspections, rest period, job assignments, campfires, etc. We found that having a short quiet time right after lunch was really necessary to allow the teachers and activity facilitators a chance to prep and set up the afternoon activities. (See the NNEC Outdoor School Schedule for some ideas.)

7. Resources. Who can you get to help? You will need volunteers to help in the kitchen, assist teachers, and run recreational activities. If your facility doesn't provide one you will need to make sure you have a health professional such as a nurse or doctor as well as a lifeguard/WSI if your facility is set up for swimming. Also, depending on your program you will need to start acquiring some basic equipment.

8. Solicit input. Establish a planning committee. Find out who is knowledgeable about the outdoors in your community. You might be surprised to find quite a few amateur naturalists. Contact a local Audubon Society, have community educators who job it is to work with community education institutions. They may be able to provide you with training and program resources.

9. Plan to meet and address safety concerns of teachers, parents, and kids.

But most importantly remember to...
Start off small and simple. Plan on lots of fun!



2004 Lawroweld Outdoor School Schedule

TUESDAY

5:00 p.m.	Registration
	Commissary for supplies
7:30 p.m.	Worship: Pastor Brownell
	Talent Night: Each school brings one entry
9:00 p.m.	Bedtime. This will be supervised by the sponsors, so teachers may meet in the Lodge for instruction.

WEDNESDAY

8:00 a.m.	Breakfast
8:45 a.m.	Worship- Pastor Brownell
9:30 a.m.	Nature Studies – (teacher remains with same class/grade Wednesday and Thursday)
12:15 p.m.	Lunch
1:00 p.m.	Quiet time: Reflection & Journaling
2:00 p.m.	Recreation I (Begins rotation)
2:45 p.m.	Recreation II
3:30 p.m.	Recreation III
4:15 p.m.	Recreation IV
5:15 p.m.	Supper
6:00 p.m.	Outdoor Initiative I (Begins rotation)
6:45 p.m.	Outdoor Initiative II
7:30 p.m.	Worship- Pastor Brownell
9:00 p.m.	Bedtime

THURSDAY

8:00 a.m.	Breakfast
8:45 a.m.	Worship- Pastor Brownell
9:30 a.m.	Nature Studies
12:15 p.m.	Lunch
1:00 p.m.	Reflection & Journaling
2:00 p.m.	Recreation I (begins rotation)
2:45 p.m.	Recreation II
3:30 p.m.	Recreation III
4:15 p.m.	Recreation IV
5:00 p.m.	Supper
6:00 p.m.	Outdoor Initiative III (Continues Rotation)
6:45 p.m.	Outdoor Initiative IV (Continues Rotation)
7:30 p.m.	Worship- Pastor Brownell
9:00 p.m.	Bedtime

FRIDAY

8:00 a.m.	Breakfast
8:45 a.m.	Worship: Pastor Brownell
9:15 a.m.	Sharing Nature Investigation by class
10:30 a.m.	Camp Clean-Up -Assignments by School
11:30 a.m.	Pack cars - Adventures return. - 12:00 Pick up lunches

