1992

NatureScope workshop handbook for facilitators

Sotera Madison

NATURESCOPE WORKSHOP HANDBOOK FOR FACILITATORS

A Project Presented to the

Faculty of

California State University,

San Bernardino

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

in

Environmental Education

by

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Approved by:

[redacted] June 1, 1992

Dr. Darleen Stoner Date

[redacted] June 2, 1992

Dr. Gary Negin Date

NatureScope Workshop Handbook For Facilitators

Sotera Madison and Wendy Nesin

California State University, San Bernardino, 1992

Abstract

This project addresses a need to provide workshops for teachers which will provide them with the means of including environmental education in the curriculum of their students. A facilitator's handbook was created to guide the training of presenters of National Wildlife Federation's NatureScope series. This handbook includes separate workshop agendas for six issues of NatureScope. These workshops were designed to prepare teachers to use NatureScope activities with their students to enable them to understand important environmental concepts. It is organized so that workshop attendees may, in turn, also become facilitators of environmental education. The workshops promote active learning to encourage creativity, curiosity, and collaborative learning. The activities are interdisciplinary and age appropriate. Correlations between the Science Framework for California Public Schools, Kindergarten Through Grade Twelve and NatureScope, Project WILD, Project WILD Aquatic and Project Learning Tree are featured. Lists of appropriate children's literature are provided. Limited field testing of four of the six suggested workshop agendas was performed.

I give special thanks to my children, Sueanna and Michael, and all of my family members for their loving support and willingness to share.
By Sotera R. Madison.

Without the loving support of my parents, I would not have been able to undertake this endeavor. Thank you, your princess.
By Wendy Nesin.

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Introduction

Throughout the 1990's and into the next century we face extremely complex, challenging environmental problems - from the accelerating loss of Earth's species to the possibility of drastic changes in global climate patterns. To address these issues, our children need to be equipped with the knowledge, skills, motivation and commitment to help solve existing environmental problems and prevent future ones. Environmental education provides the information and experiences students require to enable them become environmentally literate citizens taking an active role in protecting our environment.

There is a great need to provide educators with educational resources to enable their students to meet these demanding environmental issues. Workshops have been widely used to share information with educators. Thus the main goal of this project was the development of a handbook for workshop presenters, to be used as a guide in training presenters of the NatureScope series.

NatureScope is an environmental educational curriculum activity series developed by the National Wildlife Federation. Nineteen different issues of NatureScope have been developed. These issues were designed to assist Kindergarten through eighth grade educators in incorporating science and environmental education into their teaching. NatureScope provides educators with a comprehensive, flexible teaching "kit" on a specific topic. The background information explains environmental concepts and issues in an easy-to-understand and lively style.

The activities assist students in understanding important environmental concepts, while engaging them in active learning that encourages creativity, curiosity, and collaborative learning. Each activity can be used independently or as part of a larger unit. In addition, the activities are interdisciplinary, tying science and environment education to social science, language arts, and other subject areas.

The handbook was developed for presentation of teacher training workshops on NatureScope. It focuses on six specific issues of NatureScope: "Endangered Species: Wild and Rare," "Wading Into Wetlands," "Rain Forests: Tropical Treasures," "Amazing Mammals, Part I," "Trees Are Terrific!" and "Birds, Birds, Bird!" The issues chosen were based on a national survey by state coordinators of Project WILD, Project WILD Aquatic and Project Learning Tree. The state coordinators believed that the six selected NatureScope issues could correlate most effectively with the Project WILD, Project WILD Aquatic and Project Learning Tree guides.

Project WILD is an interdisciplinary, supplementary environmental and conservation education program emphasizing wildlife. Project WILD Aquatic is supplemental to Project WILD, providing educational materials that invite exploration and understanding of the fascinating worlds of water and the aquatic habitats they support. Project Learning Tree is an environmental education program emphasizing the development of awareness, knowledge and skills related to the understanding of forests as sustainable resources on a finite planet.

We believe that through the use of this handbook, facilitators can empower teachers with both knowledge and a sense of competence to effectively introduce and teach environmental education in the classroom.

Review of Related Literature

In preparation for the production of the NatureScope Workshop Handbook for Facilitators a variety of literature has been researched in support of this project. It was first necessary to find literature references that defined environmental education to establish the scope and bounds of this work. Other aspects of the literature review concerned barriers to environmental education, characteristics of good workshops, emphasis of California's science framework, use of children's literature, and research on NatureScope.

The goal of environmental education is to help students become environmentally aware, knowledgeable, skilled, dedicated citizens with an understanding of nature, culture, people and ideas that lead to positive attitudes about the environment. That is, citizens who are willing to work toward achieving and maintaining a dynamic equilibrium between the quality of life and the quality of the environment (Engleson, 1990; Stoner & Morrison, 1992).

"If environmental issues are to become an integral part of instruction designed to change behavior, instruction must go beyond an "awareness" or "knowledge" of issues" (Hungerford & Volk, 1990; p. 17). Students need to be given an opportunity to "construct" their own meaning to develop a sense of ownership and empowerment that fully invests in them an environmental sense which will prompt them to become responsible, active citizens (O'Neil, 1992).

It has been accepted that public schools should be instrumental in accomplishing the goals of environmental education (Ham & Sewing, 1987). However, there are barriers which inhibit teachers from implementing environmental education curricula. Logistical barriers exist, such as lack of usable curriculum with specific environmental objectives and goals. Another educational barrier stems from teachers' misgivings about their own competence to conduct environmental education programs (Ham & Sewing, 1987).

The goal of environmental workshops should be to eliminate or reduce known barriers (Ham & Sewing, 1987). To do this, the characteristics of a good workshop should include:

1) Be designed to attract teachers from all backgrounds.
2) Deal with environmental education in all areas of the curriculum, stressing method as well as content.
3) Provide training in using classroom and the schoolyard sites for environmental education.
4) Provide a holistic view of environmental education by stressing cognitive and effective elements.
5) Provide opportunities to explore a variety of instructional materials appropriate to all grade levels.
6) Be motivational, especially to nonscience teachers, so as to ensure them of their competence to teach environmental education in their classroom (Ham & Sewing, 1987).

Programs should encourage active learning on the part of students, in which they engage in hands-on science activities 40 percent of the science teaching time (Science Framework for California Public School, Kindergarten through Grade Twelve, 1990).

This framework contains a constructivist educational approach. Constructivism theory emphasizes the importance of the learner's active construction of knowledge and the interplay between new knowledge and the learner's prior knowledge. Proponents point out that discovery and exploration, which takes place as students construct meaning, is not random; teachers must have overall curriculum goals, key principles, and concepts in mind which they want students to understand (O'Neil, 1992).

Science should be used to enhance reading, mathematics and the arts (Science Framework for California Public School, Kindergarten through Grade Twelve, 1990). The framework also says that the use of science to teach other fields has been quite successful in many exemplary elementary science programs.

It has been found that careful selection of literature, in addition to helping students to better understand science concepts, can stimulate interest in the environment. Using children's literature is one of the best ways to incorporate environmental education into the classroom (O'Brien & Stoner, 1987).

Research has found that the use of NatureScope on a regular basis, and at regular intervals, may be very effective in teaching environmental awareness and knowledge as well as evoke a desire in students to take

positive action (Armstrong & Impara, 1991). Armstrong and Impara studied the effects of NatureScope when used in the classroom. Participant's knowledge and attitudes concerning the environment were the specific research questions addressed. The issues used in the study were; "Let's Hear It For Herps," "Discovering Deserts," "Wild About Weather," and "Endangered Species: Wild and Rare." NatureScope was used in the fifth and seventh grade classrooms for four to eight weeks. After exposure to NatureScope, the students exhibited new positive attitudes toward and increased knowledge about the environment (Armstrong & Impara, 1991).

Statement of Goals and Objectives

The overall goal of this project is to promote the classroom implementation of environmental education, grades Kindergarten through eighth, through teacher participation in workshops on National Wildlife Federation's NatureScope series.

The primary objective of this project was the development of the NatureScope Workshop Handbook for Facilitators. This handbook includes a comprehensive guide for facilitators on how to organize and present a workshop utilizing NatureScope materials. Also included are agendas for six issues of NatureScope, a list of related children's literature, and correlations of Science Framework for California Public Schools, Kindergarten Through Grade Twelve with NatureScope, Project WILD, Project WILD Aquatic, and Project Learning Tree .

A secondary objective was the field testing of four of the six developed agendas for workshop presentation.

Design

A facilitator's handbook guide was developed for workshop presentation, based on the use of NatureScope, for educators of grades kindergarten through eighth. NatureScope issues were chosen based on a national survey by state coordinators of Project WILD, Project WILD Aquatic and Project Learning Tree. The state coordinators believed that the six issues selected could correlate most effectively with Project WILD, Project WILD Aquatic and Project Learning Tree guides. This handbook was reviewed by Dr. Gary San Julian, National Wildlife Federation; Josetta Hawthorne and Rudolph Schafer, Western Regional Environmental Education Council; and Dr. Gary Negin and Dr. Darleen K. Stoner, professors at California State University, San Bernardino. Their suggestions were incorporated into the completed handbook.

One and two hour workshop formats were designed to present informational and hands-on activities from issues of the NatureScope series. A sample workshop agenda for six issues was developed. The agenda format allows facilitators, in a short period of time, to model several activity-based lessons. Background information on the topics of six NatureScope issues were compiled, thus allowing facilitators to share factual information with workshop participants. Correlations of the Science Framework for California Public Schools, Kindergarten Through Grade Twelve (1990) with the six selected NatureScope issues, Project WILD, Project WILD Aquatic and Project Learning Tree were compiled. These correlations provide an organized way for activities to be selected

that contribute toward students understanding of a specific science concept. A list of related children's literature was done. Out-of-door activities from NatureScope were identified for teacher utilization; an explanation of the significance of using out-of-door activities is included within the handbook.

Workshops were field tested at the Inland Empire Environmental Expo at California State University, San Bernardino, April 25, 1992. Four one hour workshops for teachers were presented on the NatureScope issues: "Rain Forest: Tropical Treasures," "Endangered Species: Wild and Rare," "Wading Into Wetlands" and "Trees Are Terrific !"
Each presentation followed the format outlined in the NatureScope Workshop Handbook For Facilitators.

All workshops provided hands-on instruction and handouts detailing the activities. The materials needed by the participants for the activities were prepared and placed in individual sets prior to the workshop. NatureScope issues were available for optional purchase by participants at the workshop. A participant survey form was provided for the evaluation of each of the workshops.

Results and Discussion

An environmental education facilitators handbook was developed, utilizing six specific issues of the National Wildlife Federation's NatureScope series. Comments received from the reviewers were incorporated into the final version of the handbook.

Four of the workshop agendas suggested in the handbook were field tested. Each participant in the workshops (presented at the Inland Empire Environmental Expo on April 25, 1992, California State University, San Bernardino) was asked to evaluate the workshop in several areas. The survey questions evaluated the usefulness of the activities and the correlations, the quality of presentation, and whether the participant felt that the length of the workshop provided enough exposure to NatureScope to enable them to use it in the classroom. The evaluation results were tallied and summarized on the Workshop Evaluation Summary sheets (see Appendix 2). Since similar results were obtained for each workshop, individual results were summed together for the following discussion.

Usefulness of activities and usefulness of correlations were rated on a scale of one to five, with five representing the highest rating. The evaluations resulted in generally positive comments about the activities and correlations presented. Based on the completed evaluations of all of the workshops, the following results were obtained from the 89 participants surveyed;

1) When responding to the usefulness of activities, 46 rated a five, 26 rated a four and 11 rated a three. There were no ratings below a three. Six did not respond to this question.

2) When responding to the usefulness of correlations, 44 rated a five; 27 rated a four; and nine rated a three. There were no ratings below a three. Fourteen did not respond to this question.

3) When the participants were asked to compare this workshop with other workshops they had attended, 17 rated it one of the best they had ever attended; 41 rated it better than average; 23 rated it average. None of the participants rated it below average. Eight participants did not respond to this question.

4) Eighty-five out of the 89 surveyed participants in the workshop felt they would be comfortable using NatureScope in the classroom after attending the workshop.

5) Four out of 89 stated they would prefer to have more workshop time to further explore the NatureScope issue being presented.

In the opinion of the facilitators, the availability and use of the handbook was highly valuable to the preparation and orderly presentation processes of the workshops.

Implication for Education

A useful tool for furthering the training of educators to teach environmental education has been developed, based on National Wildlife Federation's NatureScope series. With the major objective of this project, the development of a facilitator's handbook now completed, it is felt that this handbook has the potential to encourage exponential growth in the implementation of environmental education curricula and activities, grades Kindergarten - eighth. This potential is due to the use of the concept of training workshop facilitators who, in turn, are enabled to pass on their newly acquired skills and knowledge to many more educators.

The material produced has been successfully tested in four workshops. The strong appeal and need for these workshops were evidenced in the expansion of the size of the workshops. From an initial limit of twenty-five participants in each workshop, demand expanded the number wishing to attend to forty. This appeal and attendance support the growth potential of this project.

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Appendix 1

NatureScope Workshop Handbook For Facilitators

NatureScope

Workshop Handbook For Facilitators

Developed by
Sotera Madison, Wendy Nesin, and Darleen K. Stoner Ph.D.

A project of the Environmental Education Resource Center, California State University, San Bernardino in cooperation with the Western Regional Environmental Council and National Wildlife Federation

1992

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This handbook was produced as a master's project in environmental education by Sotera Madison and Wendy Nesin with the direction of Dr. Darleen Stoner, Professor, Environmental Education, California State University, San Bernardino.

For advice and suggestions, special thanks are given to Dr. Gary San Julian, National Wildlife Federation; and Josetta Hawthorne and Rudolph Schafer, Western Regional Environmental Education Council; and Dr. Gary Negin, California State University, San Bernardino.

What is NatureScope?

NatureScope is a activity series developed by National Wildlife Federation to assist K-8 educators in incorporating science and environmental education into their teaching. Each of the 19 NatureScope issues focuses as on a particular topic, such as endangered species, tropical rain forests, mammals or wetlands, and provides background information, hands-on activities, ready-to-copy activity sheets, glossary, and bibliography. Most include a craft section with art and craft ideas relating to the topic.

All of the material in NatureScope was reviewed by scientific and educational experts, and all of the activities have been student-tested. In addition, each is designed in a creative, easy-to-use format.

The NatureScope Approach to Education

NatureScope provides educators with a comprehensive, flexible teaching "kit" on a specific topic. The background information explains environmental concepts and issues in an easy-to-understand and lively style. The activities help students understand important environmental concepts, while engaging them in active learning that encourages creativity, curiosity, and collaborative learning. Each activity can be used independently or as part of a larger unit.

More specifically, the activities are based on a three-pronged approach to teaching environmental education. They stress **knowledge and awareness** in all disciplines; **skills**, such as problem solving, analyzing, and creative writing; and the development of an **environmental ethic**, which enables responsible behavior. In addition, the activities are interdisciplinary, tying science and the environment to social science, language arts, and other subject areas.

Why We Need NatureScope

Throughout the 1990's and into the next century, our children will face extremely complex and challenging environmental problems - from the accelerating loss of the Earth's species to the possibility of drastic changes in global climate patterns. To address these issues, our children need to be equipped with the skills, knowledge, motivation, and commitment to help solve existing environmental problems and prevent new ones. Environmental education provides the information and experiences that students need to help them become environmentally literate citizens who will take an active role in protecting our environment.

History

National Wildlife Federation created the award winning collection of NatureScope issues. Originally between 1984 and 1990 NatureScope was available through a subscription basis; the issues are now available for purchase individually or as a set. The environmental education series includes the following issues:

*Incredible Insects
*Digging Into Dinosaurs
*Wild About Weather
*Birds, Birds, Birds!
*Discovering Deserts
*Trees Are Terrific!
*Astronomy Adventures
*Amazing Mammals, Part I
*Amazing Mammals, Part II
*Wading Into Wetlands
*Geology: The Active Earth
*Endangered Species: Wild and Rare
*Let's Hear It For The Herps!
*Diving Into Oceans
*Wild and Crafty
*Rain Forests: Tropical Treasures
*Pollution: Problems and Solutions
*Insect Discovery Pac

Research Supporting the Effectiveness of NatureScope

Research has shown that the use of NatureScope has many potentially positive outcomes for students. Among these are knowledge gains and attitude changes.

Armstrong and Impara concluded in their study done with a group of students, grades Kindergarten-seven, that the students gained knowledge about and improved attitudes towards the environment. NatureScope was used in classrooms for four to eight weeks with pretest and a posttest given. During the study teachers used four different NatureScope issues: "Let's Hear It For Herps," "Discovering Deserts," "Wild About Weather," and "Endangered Species: Wild and Rare."

Source: Armstrong, J. & Impara, J. (1991, Summer). The impact of an environmental education program on knowledge and attitudes. Journal of Environmental Education, 22 (4), 36-40.

Workshop Goals

A NatureScope workshop has three main goals:

*Introduce educators to the materials and philosophy of NatureScope.
*Present teaching strategies and activities that will help students become aware of their presence in the environment and develop knowledge, skills, and environmental ethics.
*Demonstrate how educators can integrate NatureScope activities into their day-to-day teaching.

The workshop will enable the participants, with little science background, to successfully incorporate environmental education into their curriculum through the use of NatureScope.

Planning Your Workshop

This handbook is intended to be used as a step-by-step guide for planning and conducting your workshop. In the handbook, six specific NatureScope issues have been fully developed as workshops. However, all of the NatureScope issues could be presented using a similar format.

Time Frame

The length of your workshop will depend on the number of NatureScope issues you will be presenting. The approximate length of an introductory workshop for each issue is one hour.

Questions to Ask Yourself When Planning Your Workshop

Address the following questions when preparing your workshop:

*Who is the audience? What are their needs?
*What are the goals of this workshop?
*When is the most appropriate date and time to conduct this workshop considering the audience and workshop goals? Does this date conflict with other conferences and workshops in the area?
*Where should the workshop be conducted? How many people can be accommodated? Whom do I call to reserve the workshop site for that date and time?
*Does the meeting space have any disadvantages? How could I overcome them?
*How many NatureScope books do I need to make available for purchase?
*If used in conjunction with Project Learning Tree or Project WILD or Project WILD Aquatic workshop, which activities from NatureScope would best be utilized?

Generating Pre-workshop Publicity

When developing a flyer here are some suggestions:

* A brief summary about NatureScope
* The goals of the workshop and key concepts to be covered
* Who will be conducting the workshop
* The date, time, and location [including a map and directions, if necessary]
* Contact person, including address and phone number for further information
* Appropriate clothing

It will be helpful if you know in advance the number of people who will be attending your workshop. When appropriate, you may include a tear-off registration form at the bottom of your flyer that has space for the participant's name, address, home and work phone numbers, and grade level taught. To encourage early sign-ups, you may also state "enrollment is limited."

Designing the Workshop

Good workshops require careful thought and consideration. It is important that the workshop plan fits the needs of the participants and the workshop goals.

Consider the following questions:

* Why are the participants attending this workshop?
* What can I do to make it a positive experience for them?
* Based on the needs of the participants and the desired outcomes, what are the goals of the workshop?

Planning an Agenda

When planning your agenda, take into account the number of NatureScope issues you will be presenting. This will affect the length of your workshop.

Sample agendas for workshops on six NatureScope issues have been provided in this handbook, ranging from a one issue to a two issue workshop. You may use these agendas as guides when developing your own workshop. All workshops should include the definition, philosophy and history of NatureScope, a chance for participants to experience two activities per issue, and an evaluation of the workshop.

Selecting Your Activities

Within this handbook, activities are suggested which can be presented successfully at workshops (see Appendixes A-F). However, if you find other activities which are exciting to you, use them. Your enthusiasm will be contagious. Be sure to include activities which involve a variety of learning strategies and are cross-curricular. Remember your audience and address their needs, including grade-appropriate activities for their students.

For your workshop make sure you select activities that you have done yourself with students. Trying out an activity will help you in several ways: you will know first-hand how the activity works; you may develop interesting extensions or variations or locate valuable resource materials you can share; and you can bring in student work to demonstrate the activity's effectiveness.

Give participants an opportunity to engage in action-oriented activities, as well as a chance to sit periodically during other activities. Use activities that involve a variety of learning strategies.

Planning for Food and Beverages

Snacks and beverages will help participants feel comfortable and welcome. A one hour workshop will not allow for a snack time; however, for a two or three hour workshop, snacks could be provided.

Ask yourself:

* How will beverages or refreshments be provided for workshop participants? Will these be taken care of by the sponsoring organization or the facilitator?

Suggestion! Recipes for delicious treats come right out of your NatureScope issues:

*Trees Are Terrific- "Eat a Leaf," page 12 and "Tree Treats," page 66

*Rain Forests: Tropical Treasures- "Tropical Treats," page 49 and 50

Gathering Equipment and Materials

Well before the workshop date, carefully plan what materials and equipment you will need for your workshop. The time you spend now will pay off later.

You will need the following equipment and supplies:

* Flip chart and easel or overhead projector
* Masking tape
* Non-permanent marking pens, different sizes and colors
* Pens or pencils
* Scissors
* Paperclips, rubber bands
* Supplies and props needed for specific activities such as blank paper, crayons, or instructions

* For each participant (when participants do not have their own NatureScope issue), copies of table of contents, activities to be done, children's literature and, if appropriate, correlations.

Preparing Necessary Visuals

Think about any visuals you will need, such as flip charts or overhead transparencies (see Appendix I), and prepare them before the workshop. Develop a written agenda and write it on a flip chart or reproduce copies for all workshop participants.

Presenting Your Delivery

The following are some suggestions for ways to present the sample agenda. Use the suggestions if they work for you or design your own ways of presenting the various workshop elements.

Definition of a Good Workshop Facilitator

A good workshop facilitator promotes participation during a NatureScope workshop by:

* Being friendly
* Smiling a lot
* Engaging in eye contact with participants
* Listening to and understanding participants' needs
* Appearing relaxed
* Being enthusiastic
* Using gestures, body language, and movement to convey meaning
* Preparing and using high quality visuals
* Being organized, but flexible
* Conveying key concepts, but not overwhelming participants
* Encouraging feedback from workshop participants

Source: Project WILD Workshop Handbook for Facilitators. California Department of Fish and Game.

Welcome and Overview

Welcome the participants. Introduce yourself and other presenters. Give a brief overview of the agenda, which should be clearly posted. Participants feel more comfortable if they know what to expect.

Getting Acquainted (optional for 1 hour workshop)

If you are presenting a two hour workshop this is the appropriate time to include an icebreaker or, at a minimum, allow participants to introduce themselves. Each participant might say "My name is _____. I teach at _____".

If you would prefer a more interactive icebreaker, you could have each collaborative group develop a name for their table area which is related to the workshop issue. Each group should be provided with supplies to make a table sign for their chosen group name. One person from each group could then introduce their group.

What is NatureScope?

Now is the appropriate time to use the overhead transparencies or flip chart to better acquaint the participants with NatureScope's definition, philosophy, and history (see Appendix I).

Walk through NatureScope

If participants do not have a copy of NatureScope, provide them with a copy of the table of contents and any activities which you will be presenting that day which may include a "copy cat" page. Guide participants through the table of contents. Point out how the activities are arranged to begin with teaching major characteristics and then move onto skills and environmental ethics. Next review the layout of the individual activities. Mention objectives, age appropriateness, materials, and subjects.

Background Information on Issue

Provide factual information relevant to understanding the NatureScope issue being presented in the workshop. Background information for six issues of NatureScope is provided in Appendixes A-F.

Presenting NatureScope Activities

Activities that ensure success are suggested in the sample agendas. If you select your own, be sure they provide hands-on experiences.

When presenting NatureScope activities, engage the participants as learners first, then give them opportunities to reflect on the activities from their perspective as teachers. Encourage interaction among participants during activities.

Correlations

If appropriate, provide each participant with a copy of the correlations of science concept questions, Project WILD, Project WILD Aquatic, Project Learning Tree and NatureScope. The correlations enable teachers to select activities which contribute to student understanding of a science concept. Selection of activities should not be done at random. Through discovery and exploration students construct their understanding of science concepts. The 1990 Science Framework for California Public Schools, Kindergarten Through Twelve Grade, was the source of the science concept questions.

Also provide each participant with a list of children's literature which is provided in this handbook (see Appendixes A-F). Utilizing appropriate literature, in addition to enabling students to better understand the science concepts, can develop their environmental attitudes.

A table could be set up which allows for viewing copies of related children's literature and other references.

Evaluation

Each participant should complete a participant survey form at the end of the workshop (see Appendix H). You might also allow time for verbal feedback and suggestions. A "thank you for coming" is an excellent way to end your workshop.

At the Workshop Site

Setting Up

Allow yourself at least 60 to 90 minutes to set up the workshop space. By setting everything up in advance, you will be more at ease.

If you are not already familiar with the workshop site, locate restrooms, the easiest way outside, light switches, and electrical socket for overhead projector.

Remember, the arrangement of tables and chairs can help or hinder your workshop. Arrange the room in a way you feel best accommodate your workshop.

Set up the materials you will be using so they will be easily accessible when needed. You might want to establish one table as your "home base" and place on it the items you will need during the workshop.

Post the workshop agenda where everyone can see it or have copies available on the sign-in table for each participant.

It is advisable to set up a separate table where workshop participants can browse through display materials such as children's literature, sample student projects for specific NatureScope activities, issues of NatureScope not being presented, and other teacher resources, including Project WILD, Project WILD Aquatic, and Project Learning Tree.

If beverages or snacks are to be provided, set up a convenient, but separate snack area.

Conducting the Workshop

Begin the workshop on time to be fair to those who come on time. Throughout the workshop, keep in mind the characteristics of a good facilitator. Be sure to reserve time at the end of the workshop for participants to fill out the Participant Survey Form (see Appendix H).

Other Considerations to be Addressed at the Workshop

Use the Out-of-Doors

Out-of-door activities expose students to new educational experiences. By using the school grounds effectively, teachers and students can learn about all the natural forces as they relate to their situation. School grounds are almost always reflectors of the neighborhood in which they are located. In using out-of-door activities an opportunity is provided to bridge the gap between abstract ideas and the real world, thereby making learning meaningful. Appendix J provides a compilation of out-of-door activities and the issues in which they appear.

Motivating At-Risk Students

NatureScope may be used as part of an educational program for at-risk students. It is well know that standard instructional patterns have not worked for at-risk students. These students are often deficient in basic skills and find school boring and intimidating. One of the potential contributors to the solution of the dropout problem is the infusion of environmental education into the curriculum. Intrinsically, environmental education offers motivating and relevant content. At the heart of environmental education is interdependence, whereby, everything is connected in some way. This connectedness can be applied to self, peers, school, home and community, thus providing a natural way to expand the curriculum to meet the needs of at-risk students.

Source: Stoner, D.K. (1990). Student dropout prevention: teacher in-service connections to environmental education. In D. C. Engleson & J. F. Disinger (Eds.), Preparing Classroom Teachers to be Environmental Educators. (pp. 65-81). Ohio: The North American Association For Environmental Education.

Addresses for Additional Information and Material

Project WILD and Project WILD Aquatic, for grades K-12, inservice requirement. Contact: Project WILD, P.O. Box 18060, Boulder, Colorado, 80308-8060. (303) 444-2390

Project Learning Tree, for K-12, inservices requirement. Contact: Project Learning Tree, The American Forest Council, 1250 Connecticut, N.W., Washington, D.C. 20036.

For other NatureScope issues and environmental education materials contact: National Wildlife Federation, 1400 Sixteenth St. N.W. Washington, D.C. 20036-2266

Appendix A
NatureScope's Wading Into Wetlands

Sample Agenda **1 hour**

Activity	Approximate Time Suggested
1. Welcome, introduction to NatureScope (use overheads)	10 minutes
2. Walkthru NatureScope	5 minutes
3. Background information on issue	5 minutes
4. Activity 1: Little Green Monsters, page 36 Activity 2: This Pitcher's a Catcher!, page 60	25 minutes
5. Children's literature and correlations	10 minutes
6. Wrap-up: *Questions *Have participants complete survey form *Participants can browse through sample student work and other resources presented *Opportunity to buy books	5 minutes

Materials:

Little Green Monsters:
*copies of page 42
*pictures of wetland plants
*construction paper
*scissors
*glue
*crayons or markers
*stapler
*pencils

This Pitcher's a Catcher:
*copies of pitcher plant pattern, page 61
*thin cardboard (file folders)
*cardboard (3/4" x 4" strips of paper- 3 per person
*11" pieces of string
*scissors
*glue
*tape
*crayons or markers
*pictures of pitcher plants

Background Information: NatureScope's Wading Into Wetlands

Wetlands are defined as habitats that at least periodically have waterlogged soils or are covered with a relatively shallow layer of water. These areas support plants and animals that are adapted to living in an watery environment.

Most wetlands are located in low-lying areas. Rain and runoff help to keep them saturated. Some wetlands lie in places where the groundwater is at or very near the surface of the ground, which means they are constantly being "fed" from below. Other wetlands stay wet because they are next to rivers or other bodies of water that regularly overflow their boundaries. Along the coast, the tides keep many other wetlands saturated.

Wetlands are sometimes created with a little outside help. Beavers are important wetland builders. The rivers and streams that they dam often flood large areas, turning meadows into marshes or parts of forest into swampland.

People also create wetlands. A state game and fish agency might flood an area so that waterfowl will have more places to breed. On the other hand, a swamp or marsh might get its start accidentally when construction blocks the natural flow of water and causes a stream to back up and overflow.

Wetlands provide the world a number of benefits. An easy and cheap way of controlling floods is to leave wetlands in their natural state. Wetland vegetation helps to slow down fast-moving water. This can reduce flooding to an area. Wetlands can trap silt and other sediment due to flooding, helping to protect streams, lakes, and other bodies of water from a buildup of sediment. It also helps protect water supplies from pollutants and other impurities. Wetlands serve as buffers between the winds and waves of storms and the areas beyond; they are protection for farms, forests and buildings that are located behind wetlands. They also bind soil and help to keep it from eroding.

Wildlife uses wetlands as migratory stop overs and as natural nurseries. About 35 percent of all of the animals and plants listed as threatened or endangered in the United States either live in wetlands or depend on them in some way. Loss in original wetlands exceeds 90%. In the United States wetland areas are disappearing at the rate of 300,000 acres a year.

Children's Literature: NatureScope's Wading Into Wetlands

Cristini, Ermanno and Puricelli, Luigi. In The Pond. Neugebauer Press, 1984. In The Pond is a wordless tour of life in marshy wetlands.

Curran, Eileen. Life In The Pond. Troll Associates, 1985. This is a primary book, of a series dealing with various ecosystems.

Dabcovich, Lydia. Busy Beavers. Scholastic, 1988. While a family of beavers are playing, a storm comes and destroys their dams. The beavers hurry rebuild it.

Isenbart, Hans-Hunrich. A Duckling Is Born. Putnam, 1981. This beautiful book describes the life cycle of ducks.

McCloskey, Robert. Make Way For The Ducklings. Viking Press, 1941. Mother and father duck live in Charles River, Boston. After the ducklings are hatched they move to a pond.

Michl, Reinhard. A Day On The River. Barron's, 1985. This beautifully illustrated book will enhance any study of river landscapes.

Reed, George. Golden Guide To Pond Life. Golden Press, 1967. This is one of a series of handbooks for reference use.

Robertson, Kayo. Signs Along The River. Robert Rinehart Inc., 1986. Readers use evidence along a river to interpret actions of animals.

Ryder, Joanne. Under Your Feet. Four Winds Press, 1990. Tucked in the earth or deep in a pond, small creatures are living.

Turner, Ann. Heron Street. Harper & Row, Publishers, 1989. A historical perspective is presented which relates human development in a marsh area to its effect on wildlife.

Williams, Terry Tempest. Between Cattails. Charles Scribner's Sons, 1985. This book is about the interrelated organisms that make up the marsh ecosystem.

White-Carlstrom, Nancy. Goodbye Geese. Philomel Books, 1991. The author captures the magic of the changing seasons through metaphors and geese.

Correlations: NatureScope's "Wading Into Wetlands."

Science Concept Questions*	NatureScope's Wading Into Wetlands	Project WILD Aquatic
What are the characteristics of living things?	Make a Mud Snail (grades K-2) Salty Discoveries (grades K-8) Little Green Monsters (grades K-8) Cattails for Kids (grades K-2) This Pitcher's a Catcher (grades 3-8) Wild Wetland Critters (3-8)	Are You Me? (grades K-2)
What are ecosystems, and how do organisms interact in ecosystems?	Create a Scene (grades K-2) Surveys and Slogans (grades 3-5) Explore a Wetland (grades K-8) Wetland Models (grades 3-12) Put It on the Map! (grades 6-8) Amazing Mangrove (grades K-2) Build a Mangrove (grades 3-8) Changing With the Tide (grades 3-8) Hidden in the Marsh (grades 3-5)	Wetland Metaphors (grades 1-12)
How do ecosystems change?	Gator Hole Graphics (grades 6-8)	Migration Headache (grades 4-12)
What are the responsibilities of humans toward ecosystems?	From Marsh to Marina (grades 3-8) A Taste of Wetlands (grades K-8) The Great Swamp Debate (grades 3-8) What's Your Wetland I.Q.? (grades 3-8)	Dragonfly Pond (grades 4-12)
How does energy flow within an ecosystem?		Marsh Munchers (grades 3-6)

* Based on Science Framework for California Public Schools, California Department of Education, Sacramento, CA., 1990.

Appendix B
NatureScope's Birds, Birds, Birds!

Sample Agenda **1 hour**

Activity	Approximate Time Suggested
1. Welcome, introduction to NatureScope (use overheads)	10 minutes
2. Walkthru NatureScope	5 minutes
3. Background information on issue	5 minutes
4. Activity 1: Feet Are Neat, page 28 Activity 2: Bird Behavior Bingo, page 44	25 minutes
5. Children's literature and correlations	10 minutes
6. Wrap-up: *Questions *Have participants complete survey form *Participants can browse through sample student work and other resources presented *Opportunity to buy books	5 minutes

Materials:

Feet are Neat:
*copies of page 39
*clay
*pipe cleaners
*tape
*markers or crayons
*white cardboard

Bird Behavior Bingo:
*copies of page 47
*pieces of cardboard (8 1/2" x 11")
*scissors
*markers
*glue
*plastic lamination (optional)
*grease pencils (optional)

Background Information: NatureScope's Birds, Birds , Birds!

Birds are vertebrate animals; and they belong to a special group (class) of the vertebrates called Aves.

About 160 million years ago birds evolved from ancient reptiles, keeping many reptilian characteristics such as egg laying, partially hollow bones, similar types of skulls and ear bones, and scales covering parts of their bodies. But as birds evolved, they also became very different from reptiles. The scales that covered their bodies became flatter and longer, evolving into feathers. Birds also developed horny beaks but kept reptile-like scales on their legs and feet. In addition, their forelimbs gradually evolved into wings.

Feathers help a bird to fly; they also protect a bird's sensitive skin, just as hair helps protect a mammal's skin. Some feathers are also great insulators because they trap a bird's body heat. Feathers form brightly colored crests and tail displays, which are important in courtship behavior.

All birds have wings. The wings are attached to very powerful chest muscles called pectoral muscles. Bird wings are streamlined enabling them to move through the air easily. The top of the wing is convex and the bottom side is flat or only slightly curved. This shape gives a flying bird the needed lift to get off the ground. After a bird is airborne the outer ends of the wings act like propellers and rudders, helping the bird to move up, down or forward.

The type of flight depends on wing size and shape. Large soaring birds have long, broad wings; forest birds have short, broad wings for navigating through thick vegetation. Birds that are fast fliers and spend a lot of time flying will have long pointed wings.

The structure of bird bones is very different than in mammals. Bones are fused or joined together. This gives the skeleton extra strength. Bird bones are hollow or partially hollow, and some have very thin braces of bone inside for support. Having a very strong but light frame allows birds to be light enough to get off the ground and stay airborne, while giving them the strength needed to support their large flight muscles and protect their internal organs.

The eyesight of most birds is superior to that of other animals. They possess very large eyes that can focus sharply on both nearby and distant objects. Unlike other animals birds are able to see color. Birds rely on their sight for survival.

Their eyes are located in different arrangements. Most birds have monocular vision with eyes located on the side of the head which can focus independently of each other, enabling two different images to be seen at the same time. This kind of vision allows a wide field of vision. Birds with binocular vision have both eyes which focus on the same image. Binocular vision allows birds to judge distance, making it easier to follow movement.

Many birds have a keen sense of hearing. Their ears, small holes covered with feathers, are located on each side of the head just below and in back of the eyes. These holes lead to the middle and inner ears, which are very sensitive to both high and low-pitched sounds. Birds rely on their sense of

hearing to find prey and to detect danger. While birds have a keen sense of sight and hearing, their sense of smell is poorly developed.

There are a wide variety of bird beaks. The type of bill that a bird has is related to the kind of food it eats. Birds use their beaks to gather food, drink water, collect nesting materials, preen feathers, attack enemies, and feed young.

Another adaptation found in birds is a special oil gland located just above the base of the tail. This gland secretes oil which the bird rubs over its feathers with its beak. The oil helps condition and clean feathers and, in some cases, makes the feathers water-repellant.

Birds have a very efficient breathing system. They have two lungs, with special air sacs attached to each one. The air sacs spread into different parts of the bird's body allowing a bird to store more air, push more air through the lungs, and bring more oxygen to the cells.

When eating, a bird's esophagus muscles push food down the throat. At the bottom of the esophagus is a large sac called a crop. The crop stores undigested food before it enters the stomach. This adaptation permits a bird to eat extra food, store it in the crop, and slowly digest it later. Once the food passes from the crop to the stomach, acids are secreted to help in digestion. The partially digested food passes to the gizzard. Birds use their gizzard as other animals use their teeth to crush and grind hard nuts, seeds and other food. Many seed-eating birds swallow small stones to aid in the grinding process in the gizzard.

Children's Literature: NatureScope's Birds, Birds, Birds!

Baylor, Byrd. Hawk, I'm Your Brother. Aladdin Books, 1986. A boy wants to fly; everyone tells him people don't fly. He captures a young hawk out of a nest, takes it home, and puts it in a cage. When the boy takes the hawk out of the cage he puts it on a string. Eventually the boy sets the hawk free.

Byars, Betsy C. The Summer Of The Swans. Viking, 1970. Sara and her ten-year-old brother find comfort with the swans.

Hiller, Ruth. Chickens Aren't The Only Ones. Grosset and Dunlap, 1981. This informational book about animals that lay eggs is presented in a beautifully illustrated fashion.

Lasill, Fen H.. Kiya The Gull. Addison-Westey Publishing Inc., 1969. Kiya the Seagull gets a wire tangled around its body while eating. A boy finally frees the gull.

Lionni, Leo. Six Crows. Alfred A. Knopf , 1988. When the scarecrow that a farmer puts in his wheat field doesn't deter the crows, an owl helps the farmer and the crows compromise over the right to the crop.

Mowat, Farley. Owls In The Family. Bantam-Skylark, 1952. The prairie of Saskatchewan is a wonderful place in which Billy grows up. Billy has many adventures with his two owls.

Politi, Leo. Song of the Swallows. Macmillian Publishing Company, 1948. Every spring, the swallows fly to the mission in San Juan Capistrano. A young boy wants some swallows to come to his house so he plants a garden. The next spring a pair of swallows choose his garden to build a nest.

Roever, J.M.. The Brown Pelican. Steck-Vaughn Company, 1974. The life cycle and characteristics of the Brown Pelican, as well as its plight, are presented.

Turkle, Brinton. Thy Friend, Obadiah. The Viking Press, 1969. Obadiah is annoyed at first when a gull follows him around. He finally discovers the pleasure of friendship with the gull.

Yolen, Jane. Owl Moon. Phelomel Books, 1987. A father and his child walk through the woods in search of finding and observing an owl by the light of the moon.

Correlations: NatureScope's "Birds, Birds, Birds!," page 1 of 2.

Science Concept Questions*	NatureScope's Birds, Birds, Birds!	Project WILD	Project WILD Aquatic	Project Learning Tree
What are the characteristics of living things?	Prime Parts (grades K-5) Pass the Parts (grades 3-8) Name that Bird (grades 3-8) Avian Roly-Polys (grades K-5) Parrot Puppets (grades 3-5)			
How do the structures of living things perform their functions, interact with each other, and contribute to the growth of the organism?	Flappers (grades K-5) Super Birds (grades K-5) Flight of Fantasy (grades K-5) Bird Talk (grades K-2) A Bird Family Album (grades K-5) The Incredible Egg (grades K-8) Fill the Bill (grades 3-8) Feather Fun (grades K-2)	Color Crazy (grades K-6) Adaptation Artistry (grades 4-9)		
What are the relationships of living organisms and how are living things classified?	Birds and Other Beasts (grades K-3)			
How are the characteristics of living things passed on through generations? How does heredity determine the development of individual organisms?			Are You Me? (grades K-2)	
What are ecosystems and how do organisms interact in ecosystems?	Fantasy Island (grades 3-8) Migration Models (grades 3-8) House Hunting (grades K-5) Feet are Neat (grades K-5)		Blue Ribbon Niche (grades 5-12) Migration Headache (grades 4-12) Riparian Retreat (grades 6-12)	Web of Life (grades 4-6) Trees as Habitats (grades K-6)
How does energy flow within an ecosystem?		Owl Pellets (grades 3-7) Deadly Links (grades 4-9)		
How do ecosystems change?	Homing in on Habitat (grades 3-5)			

Correlations: NatureScope's "Birds, Birds, Birds!," page 2 of 2.

What are the responsibilities of humans towards ecosystems?	A Scrapbook for the Birds (grades 3-8) Birds In The News (grades 3-8)	Litter We Know (grades 4-6) No Water Off a Duck's Back (grades 6-12) Deadly Links (grades 4-9) Keeping Score (grades 4-9)	Migration Headache (grades 4-12) Plastic Jellyfish (grades K-12)	My Use or Your Use or Our Use (grades 5-6) Long Range-Short Range (grades K-3) Changing Land Values (grades 5-6) Forest Consequences (grades 4-6) Building for the Birds (grades 7-9) Endangered Species (grades 7-12)

* Based on Science Framework for California Public Schools, California Department of Education, Sacremento, CA., 1990.

Appendix C
NatureScope's Endangered Species: Wild and Rare

Sample Agenda **1 hour**

Activity	Approximate Time Suggested
1. Welcome, introduction to NatureScope (use overheads)	10 minutes
2. Walkthru NatureScope	5 minutes
3. Background information on issue	5 minutes
4. Activity 1: The Rare Scare, page 15 Activity 2: These Cards Say A Mouthful!, page 61	25 minutes
5. Children's literature and correlations	10 minutes
6. Wrap-up: *Questions *Have participants complete survey form *Participants can browse through sample student work and other resources presented *Opportunity to buy books	5 minutes

Materials:

The Rare Scare:
*copies of page 18
*markers
*graph paper
*drawing paper
*rulers
*reference books (optional)
*copies page 16 & 17 (optional)

These Cards Say A Mouthful:
*8-1/2" x 11" paper
*scissors
*glue
*crayons, markers
*pictures of endangered species

Background Information: NatureScope's Endangered Species: Wild and Rare

Scientists have identified and cataloged more than one and one-half million plant and animal species on Earth today. By some estimates, at least 20 times as many species inhabit the planet than have presently been identified. Each year we're losing many of these plant and animal species even before they are discovered. It has been estimated that a minimum of 140 plants and animal species are condemned to extinction each day.

An *endangered* species is one that's in immediate danger of becoming extinct. Its numbers are usually low and it needs protection in order to survive. *Threatened* species are those species whose populations are not yet low enough to be in immediate danger of extinction. These species are likely to become endangered if the problems affecting them don't change. *Extinct* species are no longer living.

Although extinction has been occurring naturally for hundreds of millions of years, the current rate of extinction is unprecedented. The accelerated rate of extinction is directly linked to the high rate of natural resource consumption and to the exploding human population. Many of the problems people cause are obvious: destruction of habitat, generating pollution and buying wildlife products. Less obvious are our political and economic crises that contribute to species extinction.

Preserving biological diversity, the variety of organisms on earth, is the principle reason for making every effort to slow the rate of extinction. The vitality of the Earth is reflected in the variety of its inhabitants. As we reduce this biological diversity, we may be upsetting the ecosystems that sustain all life.

Children's Literature: NatureScope's Endangered Species: Wild and Rare

Blassengame, Wyatt. Wonders of Alligators and Crocodiles. Dodd, Mead, and Company, 1973. Facts about alligators and crocodiles, dating back to the time of dinosaurs, are presented.

Cutchins, Judy and Johnston, Ginny. The Crocodile and The Crane. William Morrow, 1986. The care and breeding in zoos and other controlled environments which have helped protect endangered species are reviewed.

Facklam, Margery. And Then There Was One. Sierra Club Books, 1990. This book examines the many reasons why animals become extinct.

May, Julian. Giant Condor of California. Creative Education Society, Inc., 1972. The life cycle of the California Condor and how people have affected the Condors are presented.

Mc Clung, Robert M.. America's Endangered Birds: Programs and People Working to Save Them. Morrow, 1979. Research programs on endangered birds are examined.

Peet, Bill. Farewell to Shady Glade. Houghton Mifflin, 1966. The animals' homes are destroyed by bulldozers and they search for a new home.

Roever, J.M.. The Brown Pelican. Steck-Vaughn Company, 1974. The life cycle and characteristics of the Brown Pelican, as well as its plight, are covered.

Seuss, Dr. (Theodore Geisel). The Lorax. Random House, 1971. This book is about the Once-ler who chops down Truffula Trees and makes the environment unlivable for the animals in the area.

Wagen, Ron. Where Can The Animals Go? Greenwillow Books, 1978. The loss of habitat has affected animals in Africa as they migrate in search of grass and water.

Wood, F. Dorothy. The Cat Family. Harvey House Inc., 1968. The natural history of the mountain lion, bobcat, lynx, jaguar, ocelot tiger and leopard are told.

Zoobooks. Endangered Animals. Zoobooks, February, 1992. Many colorful illustrations enhance the factual presentation on endangered species which need our help.

Correlations: NatureScope's "Endangered Species: Wild & Rare".

Science Concept Questions*	NatureScope's Endangered Species: Wild and Rare	Project WILD	Project WILD Aquatic	Project Learning Tree
What are the characteristics of living things?	The Rare Scare (grades 3-5) Meet a Panda (grades K-2) Endangered Species ABC's (grades K-2)			
What are ecosystems, and how do organisms interact in ecosystems?		Who Fits Here? (grades 7-9)	Turtle Hurdles (grades 4-12) Blue Ribbon Niche (grades 5-12)	Web of Life (grades 4-6)
How do ecosystems change?	Habitat is Home (grades K-2) All Around the World (grades 3-5) Sizing Up Reserves (grades 3-8) Wheel of Trouble (grades K-2) Paradise Lost (grades K-5) Short Takes (grades 3-8)	Here Today, Gone Tomorrow (grades 5-12) Who Lives Here? (grades 4-9) Planting Animals (grades 4-9) Deadly Links (grades 4-9) Flip the Switch for Wildlife (grades 5-12) Riparian Zone (grades 7-12) Rare Bird Eggs for Sale (grades 7-12) Fire Ecologies(grades 7-12)		
What are the responsibilities of humans toward ecosystems?	Get the Connection! (grades 3-8) A Timely Activity (grades 3-5) The People Factor (grades 3-8) Wildlife for Sale (grades 3-8) They're Bouncing Back! (grades K-2) People Power (grades K-8) Recovery! (grades 3-8) Meet the Press (grades 6-8)	No Water Off a Duck's Back (grades 6-12) Cartoons and Bumper Stickers (grades 6-12) Too Close for Comfort (grades K-7) Migration Barriers (grades 4-6) Polar Bears In Phoenix? (grades 7-12) A History of Wildlife Management (grades 7-12) Cabin Conflict (grades 7-12) When a Whale Is a Right (grades 7-12)	Plastic Jellyfish (grades K-12) Turtle Hurdles (grades 4-12) Blue Ribbon Niche (grades 5-12) To Dam or Not To Dam (grades 4-12) Deadly Waters (grades 3-12) Dragonfly Pond (grades 4-12) Migration Headache (grades 4-12) Net Gain, Net Effect (grades 3-6)	The Native Way, a Natural Lifestyle (grades 4-6) A Day In the Life... (grades 7-9) The Continuing Adventures of the Truffula Tree Company (grades 7-12) Endangered Species (grades 7-12)

* Based on Science Framework for California Public Schools, California Department of Education, Sacramento, CA., 1990.

Appendix D
NatureScope's Trees Are Terrific!

Sample Agenda **1 hour**

Activity	Approximate Time Suggested
1. Welcome, introduction to NatureScope (use overheads)	10 minutes
2. Walkthru NatureScope	5 minutes
3. Background information on issue	5 minutes
4. Activity 1: Getting To Know a Tree, page 31 Activity 2: Tree Top Traffic, page 36	25 minutes
5. Children's literature and correlations	10 minutes
6. Wrap-up: *Questions *Have participants complete survey form *Participants can browse through sample student work and other resources presented *Opportunity to buy books	5 minutes

Materials:

Getting To Know a Tree:
*drawing paper (one per person)
*clear contact paper (optional)
*pencils
*glue (optional)
*crayons (optional)

Tree Top Traffic:
*copies of pages 43 & 44
*large paper clips
*scissors
*tape
*crayons

Background Information: NatureScope's Trees Are Terrific!

Trees provide homes and food for wildlife, help prevent soil erosion, and even act as "water filters" in many natural communities. They are also a big part of people's lives in more ways than most of us realize.

It's hard to define a tree. Trees share similar characteristics but there are exceptions that don't fit a nice, neat definition. Trees differ from other types of plants. Most trees grow much taller; woody roots, trunks and limbs provide the physical support that allows them to grow tall.

Trees live longer than most other plants. For example, Bristlecone Pines can live for over 4000 years.

Trees come in different shapes and sizes. Worldwide there are 20,000 different species of trees and over 800 grow in North America.

Trees are classified into two main plant groups: Gymnosperms and Angiosperms. Gymnosperms are plants that have seeds which are not enclosed in a flower and do not produce the true flowers or fruit later. Conifers are the most common types of Gymnosperms. Angiosperms are the only types of plants that have true flowers and bear their seeds in fruits.

There are deciduous and evergreen trees. Deciduous trees are trees that lose all of their leaves every year. Evergreen trees do not lose all their leaves at one time. Instead they replace only a few leaves a year.

Trees could not survive without water. Trees need water for several reasons: a large percentage of each cell is made up of water; water pressure helps the leaf's cells maintain the leaf's shape; water is used for photosynthesis to make sugar; and water carries dissolved sugars down through the tree parts.

Children's Literature: NatureScope's Trees Are Terrific!

Arnoskey, Jim. In the Forest. Lothrop, Lee and Shepard Books, 1989. This wonderfully illustrated book depicts the many environments within a forest.

Baker, Jeannie. Window. Greenwillow Books, 1991. In this wordless picture book, a mother and baby look through a window at the view of wilderness and sky. Time passes and as the boy grows, the scenes through the window change.

Burne, David. Tree. Alfred A. Knopf, Inc., 1988. This book discusses different types of tree with clear and colorful photographs. The life cycle and parts of a tree are addressed.

Donahue, Mike, The Grandpa Tree. Roberts Rinehart, Inc. Publishers, 1988. A seed is dropped by a bird. The seed grows into a fine strong tree. Squirrels play in his branches and birds build nests. The tree grows old and needs to make room, for the young trees. The Grandpa tree falls to the ground making a home for rabbits and ants. This is a beautifully written story about the live cycle of trees.

George, Jean C. The Hole in the Tree. E.P. Dutton, 1957. The hole in an apple tree starts out being a hole for a bark beetle. Many creatures inhabit the tree and finally it becomes inhabited by a family of raccoons.

Hiscock, Bruce. The Big Tree. Macmillian Publishing Company, 1991. This is the story of a magnificent sugar maple tree from its days as a seedling during the American revolution to the present.

Holling, Clancy Holling. Tree in the Trail. Houghton Mifflin Company, 1970. A cottonwood tree watches the pageant of history along the Santa Fe Trail for over two hundred years.

Hunt, Angela Elivell (retold). The Tale of Three Trees. Lion Publishing Corporation, 1989. This is a folktale about three trees whose wishes come true in a surprising way.

Jaspersohn, William. How the Forest Grew. Greenwillow Books, 1980. This book is about a hardwood forest and how it developed.

Johnston, Tony. Yonder. Dual Books for Young Readers, 1988. The circle of life is portrayed through the importance of trees to a family.

Kuhn, Dwight. The Hidden Life of the Forest. Crown Publishers, 1988. Using photography this book describes many plants and animals whose habitat is the forest.

Martin, Bill Jr. The Ghost Eyetree. Scholastic, 1985. The tale of two children's fear of a "scary tree" is told.

Romanova, Natalia. Once There Was A Tree. Dial, 1985. This is a Russian tale about a tree stump that attracts many living creatures who all believe the tree belongs to them.

Rose, Deborah Lee. The People Who Hugged the Trees. Roberts Rinchart, 1990. In this folktale of the Chipko a young girl in India grows up to lead her village in saving a forest.

Ryder, Joanne. Hello Tree. Lodestar Books, 1991. This book invites the reader to find their own special tree. It explores the many wonderful things associated with having a special tree.

Seuss, Dr. (Theordore, Geisel). The Lorax. Random House,1971. This book is about the Once-ler who chopped down Truffula Trees. His business not only destroys all the trees but makes the environment unlivable.

Silverstein, Shel. The Giving Tree. Harper and Row, 1964. A tree and a young boy become friends. As the boy becomes older he uses the tree's resources. In the end the tree and the man are happy.

Udry, Janice. A Tree Is Nice. Harper Junior Books, 1956. This story tells simply and beautifully why a tree is nice.

Van Allsburg, Chris. Just A Dream. Houghton Mifflin Company, 1990. Walter is a young boy who is not an environmentally enlightened individual. One night while in bed Walter visits a future in which the environment is destroyed. When Walter returns to the present, his environmental attitude has changed.

Correlations: NatureScope's "Trees are Terrific!," page 1 of 3.

Science Concept Questions*	NatureScope's Trees are Terrific!	Project WILD	Project Learning Tree
What are the characteristics of living things?	Leaf It to Us (grades K-2) Tree Facts (grades K-2) Build a Tree (grades K-5) Eat a Leaf (grades K-8) Keying Out Trees (grades 3-8) Tell-Tale Transpiration (grades 3-8) Reading the Rings (grades -8) Grow a Sprout (grades K-3) Twig Detectives (grades K-5) Tree-Top Traffic (grades K-3) Undercover (grades K-5) A Rotten Place to Live (grades K-8)		Adopt-A-Tree (grades K-6) The Closer You Look (grades K-6) Leaf Hunt Relay (grades 3-6) Memory Circle (grades 4-6) Branching Out (grades 5-6) How Big is Your Tree? (grades K-6) Tree Cookies (grades K-6) Bursting Buds (grades K-3) Did You See That Dogwood Bark? (grades 4-6) Tree Treats (grades K-8) Picture Poetry (grades 3-8) Tree Champs (grades 3-8) Dogwood (grades 4-6)
How do the structures of living things perform their functions, interact with each other and contribute to the maintenance and growth of the organism?	Eat a Leaf (grades 3-8) Tell-Tale Transpiration (grades 3-8) Treetop Traffic (grades K-3) A Walk in the Woods (grades K-3) Under Cover! (grades K-5) A Rotten Place to Live (grades K-8) We All Need Forests (grades K-5)		Schoolyard Safari (grades K-4) Healing Wounds (grades 3-5) Sunlight and Shades of Green (grades 4-6) The Fallen Log (grades 4-6) Large Leaves (grades K-3) Trees as Habitats (grades K-6)

Correlations: NatureScope's "Trees are Terrific!," page 2 of 3.

How do humans interact with other living things?	Maple Seed Mix-up (grades 3-5) We All Need Forests (grades K-5) Disappearing Trees (grades K-8) From Paper to Plastic (grades K-5) Tree Treats (grades K-8)	What's For Dinner? (grades 3-7)	Memory Circle (grades 4-6) Make Your Own Paper (grades 4-6) With or Without (grades 4-6) Plant Dyes (grades 4-6) Did You Ever Eat a Pine Tree? (grades K-6) Paper in the Classroom (grades 5-6) The Native Way, a Natural Lifestyle (grades K-6) Musing on Music (grades K-6) Movin' (grades 4-6) Keep on Truckin' (grades 4-6)
What are cells? What are their component structures and their functions? How do they grow? What is their biochemical basis of life and metabolism?	Eat a Leaf (grades 3-8) Tell-Tale Transpiration (grades 3-8) Under Cover (grades K-5) A Rotten Place to Live (grades K-8) From Paper to Plastic (grades K-5)		The Fallen Log (grades 4-6) Web of Life (grades 4-6)
How are the characteristics of living things passed on through generation? How does heredity determine the development of individual organisms?	Grow a Sprout (grades K-3)	Seed Need (grades 5-6)	A Tree from an Acorn (grades K-3) Seed Dispersal (grades 4-6)
What are ecosystems, and how do organisms interact in ecosystems?	Maple Seed Mix-up (grades 3-5) Under Cover (grades K-5) A Rotten Place to Live (grades K-8)	Eco-enrichers (grades 6-12) How Many Bears Can Live in This Forest? (grades 3-9)	Holding Power (grades 3-6) Forest Concentration (grades 4-6) Web of Life (grades 4-6) Schoolyard Diversity (grades 5-6) Rainfall and the Forest (grades 5-6) Healthy and Unhealthy (grades 5-6)
How does energy flow within an ecosystem?	Eat a Leaf (grades 3-8) A Rotten Place to Live (grades K-8)		

Correlations: NatureScope's "Trees are Terrific!," page 3 of 3.

How do ecosystems change?	Hidden Colors (grades 3-8) A Rotten Place to Live (grades K-8)	Forest in a Jar (grades K-6) Rainfall and the Forest (grades 6-9)	Signs of Fall (grades K-3) Origin of Urban Open Space (grades 5-6) Did You Notice? (grades 4-6) Fire! (grades 4-6) Forest Consequences (grades 4-6)

* Based on **Science Framework for California Public Schools**, California Department of Education, Sacramento, CA., 1990.

Appendix E
NatureScope's Amazing Mammals, Part I

Sample Agenda **1 hour**

Activity	Approximate Time Suggested
1. Welcome, introduction to NatureScope (use overheads)	10 minutes
2. Walkthru NatureScope	5 minutes
3. Background information on issue	5 minutes
4. Activity 1: Nose-Know How: Keeping Track of Baby, page 8 Activity 2: Mammals, Mammals, Everywhere page 59	25 minutes
5. Children's literature and correlations	10 minutes
6. Wrap-up: *Questions *Have participants complete survey form *Participants can browse through sample student work and other resources presented *Opportunity to buy books	5 minutes

Materials:

Nose- Know How:
*several different scents (vanilla, peppermint, lemon maple)
*empty film canisters (one for every two participants)
*cotton balls

Mammals, Mammals, Everywhere:
*copies of page 59 & 60
*magazines & newspaper
*crayons or markers
*easel paper
*scissors
*glue

Background Information: NatureScope's Amazing Mammals, Part I

Mammals belong to a large group of vertebrates called Mammalia. Mammals have a bony backbone called vertebrate column and a cranium, a hard case made of bone or cartilage that surrounds the brain.

Mammals are warm-blooded. This enables them to be active in a wide range of temperature. Warm-blooded animals burn a lot of fuel and this is why mammals consume great amounts of food. Female mammals nurse their young with milk. Most mammal babies suck the milk from their mother's nipple. Some mammals such as platypuses, don't have nipples; instead their milk oozes out of glands on their bellies where the young suck it up.

Mammals are covered with skin. Usually the skin is very thin and soft. Elephants and rhinos are exceptions to that characteristic. Mammal skin is loaded with different kinds of glands: mammary glands produce milk; oil glands produce oil; sweat glands produce sweat; and scent glands produce substances for communication and defense (such as skunks). All mammals have mammary glands, but not all mammals have oil, sweat or scent glands.

Hair is found only on mammals. Most mammals have hair; however there are a few who do not.

Mammals have keen senses. For many mammals, smell is an important sense. The sense of smell is used in finding food, a mate or a place to live.

The sense of sight is highly developed for many mammals. Most mammals have outer ears to help catch sound waves. Humans, apes and other primates hold the record for the best mammal eyesight during the day.

Children's Literature: NatureScope's Amazing Mammals, Part I

Barrett, Judi. Animals Should Definitely Not Wear Clothing. Macmillan Publishing Company, 1970. This is a humorous book that gives a number of reasons why animals should not wear clothes.

Brockman, Alfred. Wild Animals. Rourke Enterprises, Inc., 1986. This book contains numerous facts about animals.

Dabcovich, Lydia. Busy Beavers. Scholastic, 1988. While a family of beavers are playing, a storm comes and destroys their dam. The beavers hurry to fix and rebuild it.

Kellogg, Steven. Can I Keep Him? Dial Book, 1971. A young boy brings home a dog and cat. His mother will not let him keep them. He then pretends to bring home wild animals. His mom still has reasons why he can't keep them.

Martin, Bill J.. Brown Bear, Brown Bear, What Do You See?. Holt, 1983. A patterned rhyme provides for observation of colors and animals.

McCloskey, Robert. Blueberries for Sal. The Viking Press, 1948. How mothers care for their babies is portrayed.

Peet, Bill. Farewell to Shady Glade. Houghton Mifflin, 1966. The animals' homes are destroyed by bulldozers and they search for a new home.

Taylor, Theodore. The Hostage. Delcarte Press/ New York, 1987. The Tubbs family catches a killer whale which they can sell for $100,000. Jamie develops a relationship with the whale and has to decide between the family's needs and those of the whale.

Voirst, Judith. The Tenth Good Thing About Barney. Athenuem, 1971. Barney the cat died. The tenth good thing about Barney is that he is in the ground and will help the plants grow.

Wagen, Ron. Where Can the Animals Go?. Greenwillow Books, 1978. As animals in Africa migrate in search of grass and water, it becomes more difficult for them to find a place where people don't live.

Ward, Lynn. The Biggest Bear. Houghton, 1972. A boy adopts an orphaned bear and faces difficulties as the bears grows up.

Wood, F. Dorothy. The Cat Family. Harvey House Inc., 1968. This book tells the story of the mountain lion as a kind of cat. It also moves on to other kinds of cats: bobcat, lynx, jaguar, ocelot, tiger and leopard.

Zoobooks. Endangered Animals. Zoobooks, February, 1992. This book addresses the issue of how endangered species need our help.

Correlations: NatureScope's "Amazing Mammals, Part I," page 1 of 3.

Science Concepts Questions*	**NautreScope's Amazing Mammals, Part 1**	**Project WILD**	**Project WILD Aquatic**
What are the characteristics of living things?	For the Record (grades K-8) Nose Know-How (grades K-8) The Vertebrated Grab Game (grades 3-5) Milk is Amazing (grades K-5) Make a Baby Annoucement (grades 3-8) Tricky Tracks (grades 3-8)	What's Wild (grades K-3) Animal Charades (grades 4-12) Color Crazy (grades K-6) Tracks (grades 4-7) Graphananimal (grades 2-6) The Thicket Game (grades K-6) Seeing is Believing or the Eyes Have It (grades K-6) Surprise Terraium (grades K-3) Polar Bear in Phoenix (grades 2-6) And the Wolf Wore Shoes (grades 2-5)	Are You Me? (grades K-2) Mermaids and Manatees (grades 4-12) Whale of a Tail (grades 2-8)
How do the structures of living things perform their functions, interact with each other and contribute to the maintenance and growth of the organism?	The Layered Wolf (grades 3-5) Mammals on the Move (grades K-5)	What's for Dinner? (grades 3-7) Eco-enrichers (grades 6-12) Good Buddies (grades 4-7)	
What are the relationships of living things and how are living things classified ?	Family Password (grades 3-8) A Menu for Mammals (grades 3-5) Mix and Match Mammals (grades 3-8)	Seed Need (grades 5-6) What Bear Goes Where? (grades K-3)	

Correlations: NatureScope's "Amazing Mammals, Part I," page 2 of 3.

How do humans interact with other living things?	Mammals Picture Stories (grades K-2) Mammals, Mammals Everywhere (grades 3-6) Mammal Know It All (grades 3-8)	Wildlife is Everywhere (grades K-3) Microtrek Scavenger Hunt (grades 4-6) Stormy Weather (grades 4-9) Museum Search for Wildlife (grades 3-6) Animal Poetry (grades 4-7) Wildwork (grades K-6) First Impressions (grades K-6) Keeping Score (grades 4-8) What Did Your Lunch Cost Wildlife? (grades 4-12)	
How are the characteristics of living things passed on throung generations? How does herdity determine the development of individual organisms?	Mammals, Past and Present (grades 3-8) Super Babies (grades K-12) Mammal Picture Stories (grades K-2)		Are You Me? (grades K-2)
How has life changed and diversified through time? What processes and patterns characterize the evolution of life?	Mammals, Past and Present (grades 3-8)	Here Today, Gone Tomorrow (grades 5-12)	

Correlations: NatureScope's "Amazing Mammals, Part I," page 3 of 3.

What are ecosystems, and how do organisms interact in ecosystems?	Mammal Safari (grades K-8) Habitats for Sale (grades 3-5) A Home in a Range (grades 3-8)	The Beautiful Basics (grades 2-12) Everybody Needs a Home (grades K-3) Habitat Lap Sit (grades 4-9) Habitracks (grades 2-5) What's That Habitat? (grades 2-3) My Kingdom for a Shelter (grades 5-9) Quick Frozen Critters (grades 4-6) How Many Bears Can Live in This Forrest ? (grades 3-9) Oh Deer! (grades 4-12) Who Lives Here? (grades 4-9) Learning to Look, Looking to See (grades K-8)	Blue Ribbon Niche (grades 5-12)
What are the responsibilities of humans toward ecosystems?	The Rare Ones (grades 3-8)	Litter We Know (grades 4-6) Make a Coat (grades K-6) Checks and Balances (grades 6-12) No Water Off a Duck's Back (grades 6-12) The Hunter (grades 5-9) Saturday Morning Wildlife Watching (grades K-6) The Power of a Song (grades 6-12) Changing Attitudes (grades 5-12) Too Close for Comfort (grades K-7) Improving Wildlife Habitat in the Community (grades 4-12)	To Dam or Not to Dam (grades 4-12) Enviro-Ethics (grades 6-12)

* Based on Science Framework for California Public Schools, California Department of Education, Sacramento, CA., 1990.

Appendix F
NatureScope's Rain Forests: Tropical Treasures

Sample Agenda **1 hour**

Activity	Approximate Time Suggested
1. Welcome, introduction to NatureScope (use overheads)	10 minutes
2. Walkthru NatureScope	5 minutes
3. Background information on issue	5 minutes
4. Activity 1: Figuring Out Forests, page 6 Activity 2: Beautiful Bromeliads, page 64	25 minutes
5. Children's literature and correlations	10 minutes
6. Wrap-up: *Questions *Have participants complete survey form *Participants can browse through sample student work and other resources presented *Opportunity to buy books	5 minutes

Materials:

Figuring Out Forests:
*copies of page 16 & 17
*enlarged copy of rainfall, humidity and temperature representative of North American forest page 16 & 17
*enlarged copy of rainfall, humidity and temperature representative of the rain forest page 16 & 17
*pencils

Beautiful Bromeliads:
*copies of pattern, page 64
*pictures of bromeliads
*toilet paper rolls (one per person)
*green and blue construction paper
*scissors
*tape
*crayons
*one frog pattern, page 65 for each participant

Background Information: NatureScope's Rain Forests: Tropical Treasure

A forest is a large area of land that is covered with trees. But, it's much more than just that. A forest is a growing, changing community made up of many different plants and animals that interact with each other in many different ways.

A tropical rain forest is a forest that has broad-leaved trees such as oaks, maples, birches and palms. Tropical rain forests grow near the equator where temperatures are warm year round and there is lots of rain (average rainfall is 400 centimeters a year).

Rain forests cover only a tiny part of the earth's surface (less than 2%) but they are home to half the Earth's species of plant and animals. The plant and animal life is richer and more diverse than in any other forest on Earth.

There are three predominant areas of rain forests. The largest one is the Amazon River in South America. Next is the Congo River Basin in Africa, and lastly the rain forests of Southeast Asia.

The climate of a rain forest is hot and moist throughout the year. The high temperature and moisture are ideal for decomposer organisms. Organic matter that falls to the forest floor is quickly decomposed. The minerals released by decomposition åre rapidly taken up again by plants, and so almost all the nutrients of the forest are locked within the bodies of living organisms. Thus the nutritional wealth is in the plants, not in the soil.

There are three layers of the rain forest, each with its own type of animals. The three layers are: canopy, understory and forest floor.

The canopy gets the most light. It contains branches and leaves of the tallest trees. Most of the photosynthesis takes place here, making it the food factory of the forest. Some animals of this level are the toucan, spider monkey, two-toed sloth and howler monkey. For the larger animals this level provides space for flying, gliding, leaping, climbing and running along branches.

The understory has much shorter trees and shrubs. Animals of this level include the jaguar, marqay, tapir, anaconda, ocelot and emerald tree boa.

The forest floor contains ferns, grasses, wildflowers, logs, leaves, lichen and mosses. It is dark and damp on the floor of the forest. In this level you can find many types of butterflies, the tree frog, as well as many other types of frogs.

Within the forest itself there are groups of animals that have specific jobs to do. They are a part of the forest's food chain. The food chain is made up of three groups: producers, consumers and decomposers.

The animals of the rain forest are abundant. Many are striking and colorful; yet few can be seen. The main reason for this is that a large proportion of the animals (including birds) live in the trees and rarely come down to ground level. Another reason is that many of the animals are nocturnal and are only active at night.

Many of the plants and animals that live in the rain forests can't live anywhere else. The special world of the rain forest is their only habitat.

Correlations: NatureScope's "Rain Forests: Tropical Treasures," page 1 of 3.

Science Concept Questions*	NatureScope's Rain Forests: Tropical Treasures	Project WILD	Project Learning Tree
What are the characteristics of living things?	Figuring Out Forests (grades K-2) Jungle Journey (grades K-5) Tropical Trivia Trek (grades 3-8) Lost in the Jungle (grades 6-8) Canopy Critters (grades K-2) The Rain Forest Review (grades K-5) Treetop Explorers (grades 3-8) Rings with Wings (grades K-5)	What's Wild (grades K-3) Ants on a Twig (grades 3-9) Color Crazy (grades K-6) Interview a Spider (grades 5-8) Everybody Needs a Home (grades K-3) My Kingdom for a Shelter (grades 5-9) Tracks (grades 4-7) Graphananimal (grades K-6) Surprise Terrarium (grades K-3)	Adopt-A-Tree (grades K-6) The Closer You Look (grades K-6) Leaf Hunt Relay (grades 3-6) Memory Circle (grades 4-6) A Field, A Forest and a Stream (grades 4-6)
How do the structures of living things perform the functions interact with each other and contribute to the maintenance and grouth of the organism?	Jungle Sleuths (grades 5-8)	Habitat Lap Sit (grades 4-9) Eco-enrichers (grades 6-12) Good Buddies (grades 4-7) Rainfall and the Forest (grades 6-9)	Water You Know? (grades K-6) The Fallen Log (grades 4-6) Sow Bug 'n' Soil (grades 5-6)
What are the relationships of living organisms, and how are living things classified?	Forest Comparisons (grades 3-8) Design a Plant (grades 3-8)	Forest in a Jar (grades K-6)	Sounds In City and Forest (grades K-6) Signs of Fall (grades K-3) Branching Out (grades 5-6)

Correlations: NatureScope's "Rain Forests: Tropical Treasures," page 2 of 3.

How do humans interact with other living things?	Forest People (grades K-2) Tropical Treats (grades K-8) Jungle In The Pantry (grades 3-8)	Wildlife is Everywhere (grades K-3) Stormy Weather (grades 4-9) Let's Go Fly a Kite (grades 4-6) Wildwork (grades K-6)	Choose an Environment (grades 4-6) The Second Little Pig (grades K-9) Woodwork (grades K-6) Interview a Board Worker (grades K-6) Woven History (grades 4-6) Musing on Music (grades K-6) Movin' (grades 4-6) Keep on Truckin'? (grades 4-6)
What are ecosystems, and how do organisms interact in ecosystems?	Jungle Sleuths (grades 5-8)	Forest in a Jar (grades K-6) Habittracks (grades 2-5) What's That Habitat? (grades 2-3) Oh Deer! (grades 4-12)	Forest Concentration (grades 4-6) Web of Life (grades 4-6) Large Leaves (grades K-3) Trees as Habitats (grades K-6) Plant Growth and Temperature (grades 5-6) Rainfall and the Forest (grades 5-6) Healthy and Unhealthy (grades 5-6)
How do ecosystems change?	Are You Part of the Problem? (grades 6-8)	Forest in a Jar (grades K-6) Rainfall and the Forest (grades 6-9) Smokey the Bear Said What? (grades 4-6)	Holding Power (grades 3-6) Bursting Buds (grades K-3) Fire! (grades 4-6) Forest Consequences (grades 4-6)

Correlations: NatureScope's "Rain Forests: Tropical Treasures," page 3 of 3.

What are the responsiblities of humans toward ecosystems?	You Can Help! (grades K-8) Why Save Rain Forests? (grades 3-8) Issues and Answers (grades 6-8)	Animal Poetry (grades 4-7) The Power of a Song (grades 6-12) Too Close For Comfort (grades K-7) Shrinking Habitat (grades 4-7) Enviro-ethics (grades 6-12)	Maple Mallets and Ash Bats (grades K-6) Make Your Own Paper (grades 4-6) Did You Ever Eat a Pine Tree (grades K-6) Long Range-Short Range (grades K-3) Classroom Conservation (grades K-6) Outdoor Manners Coloring Book (grades K-6) Forest Consequences (grades 4-6)

* Based on Science Framework for California Public Schools, California Department of Education, Sacramento, CA., 1990.

Appendix G
Sample Agenda
One Hour Workshop for a NatureScope Issue

Activity	Approximate Time Suggested
1. Welcome, introduction to NatureScope (use overheads)	10 minutes
2. Walkthru NatureScope	5 minutes
3. Background information on issue	5 minutes
4. Lead selected activities from NatureScope issue	25 minutes
5. Children's literature and correlations	10 minutes
6. Wrap-up: *Questions *Have participants complete survey form *Participants can browse through sample student work and other resources presented *Opportunity to buy books	5 minutes

Sample Agenda
Two Hour Workshop for Two NatureScope Issues

Activity	Approximate Time Suggested
1. Welcome, Introduction to NatureScope (use overheads)	10 minutes
2. Conduct icebreaker	10 minutes
3. Walkthru NatureScope, include correlations and children's literature supplement	10 minutes
4. Introduction to issue #1	5 minutes
5. Two activities for issue # 1	30 minutes
6. Introduction to issue #2	5 minutes
7. Two activities for issue #2	30 minutes
8. Wrap-up: *Questions *Have participants complete form survey	10 minutes
9. Opportunity for participants to browse through available materials and sample student work	10 minutes

Appendix H

Participant Survey Form

Thank you for participating in a NatureScope workshop. The sponsors and presenters on this workshop would like to ask your assistance in providing the following information. Your responses will help us evaluate the workshop's effectiveness and improve its effectiveness.

Date:_____

Presenter:_____

1. Your District: _____

2. Your school:_____

3. Circle the letter of the most appropriate response to the following:

(a) Elementary teacher
(b) Middle school teacher
(c) High school teacher
(d) Principal
(e) Curriculum specialist
(f) Preservice teacher
(g) Other: _____

4. Grade Level or Subject taught:_____

	Very Useful		Somewhat useful		Not useful
5. Usefulness of the activities:	5	4	3	2	1
(please circle number)					
Usefulness of correlations:	5	4	3	2	1

6. " Compared to all other training sessions or workshops I have attended, this was..."
(a) one of the best I've attended.
(b) better than average
(c) average
(d) below average
(e) one of the worst I've attended

7. After completing this workshop do you feel comfortable using NatureScope in the classroom?

No Yes

8. Any other comments, suggestions, requests, concerns?

Appendix I

Masters For Flip Charts or Overhead Transparencies

What is NatureScope?

Creative activity series developed by National Wildlife Federation which incorporates science and environmental education

Each activity stands on its own or may be used as part of a larger unit

Grades K-8

Student tested

Fully developed

Easy to use format:

1. **Background information**
2. **Objectives**
3. **Age appropriate materials**
4. **Hands-on activities**

Motivational

NatureScope developmental approach

Awareness

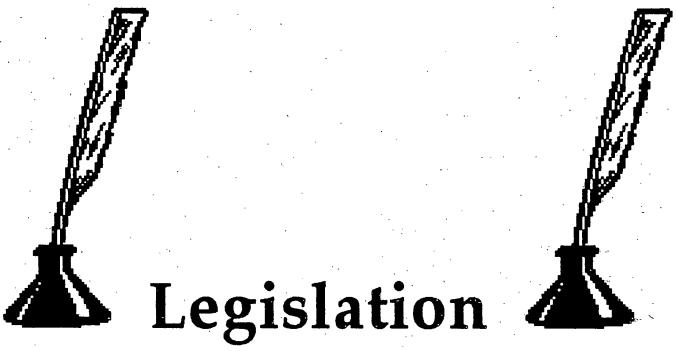
Knowledge

Skills

Environmental ethics

NatureScope provides direct, participatory activities beneficial to students

[and FUN, too!]



Legislation

National Environmental Education Act

signed by President Bush, 1990

California 1968 mandate

[Miller bill] requires environmental education be taught in appropriate grade levels [K-12] and subjects

Why Not?

***No materials**

***No time to develop them**

***No training**

Therefore.....

Teachers Need NatureScope!

*Materials

*Training

*Not an "add-on"

Research shows that regular use = positive outcomes

Knowledge

Attitudes

Armstrong J. B. & Impara J. C. (1991). The impact of an environmental education program on knowledge and attitude. The Journal of Environmental Education. 22 (4), 36-40.

AWARDS

SELECTED FOR THE 1991 ERIC/SMEC INDEX, PROMISING AND EXEMPLARY PROGRAMS AND MATERIALS FOR K-12 SCIENCE EDUCATION

1990 ENVIRONMENTAL ACHIEVEMENT AWARD FROM RENEW AMERICA'S "SEARCHING FOR SUCCESS" CAMPAIGN

1990 NATIONAL ARBOR DAY FOUNDATION EDUCATION AWARD FOR RAIN FORESTS: TROPICAL TREASURES

1989 AWARD FOR EXCELLENCE IN EDUCATION FROM MEDIA & METHODS

1988 AWARD FOR OUTSTANDING SERVICES TO METEOROLOGY FROM THE AMERICAN METEOROLOGICAL SOCIETY FOR WILD ABOUT WEATHER

1987 WYOMING FIELD SCIENCE FOUNDATION AWARD

1986 NATIONAL ARBOR DAY FOUNDATION EDUCATION AWARD FOR TREES ARE TERRIFIC!

NATURAL RESOURCES COUNCIL OF AMERICA ACHIEVEMENT AWARD BEST EDUCATION EFFORT FOR 1984

Appendix J

NatureScope offers many activities that can be done in the out-of-doors. Listed below are the names of these activities and the issue in which they appear. In all issues of NatureScope, outdoor activities are coded with a sun symbol.

Endangered Species: Wild and Rare
The Rare Scare (Branching Out: Picky Eaters), page 10
Sizing Up Reserves (Branching Out: Measure the Difference), page 30
Paradise Lost (Branching Out: Introduced Species Walk), page 41

Wading Into Wetlands
Explore a Wetland, page 8
Changing With the Tide (Part I: Low Tide/High Tide), page 27

Birds, Birds, Birds!
Super Birds, page 8
House Hunting, page 22
Bird Behavior Bingo, page 44
Watch the Birdie, page 52
Feet are Neat (Branching Out: Take A Hike), page 28

Amazing Mammals, Part I
For the Record, page 6
Nose Know-How (Sniffing Out the Trail), page 9
The Vertebrate Grab Game, page 13
Milk is Amazing! (Branching Out: A Trip To the Dairy), page 29
Mammals on the Move (Branching Out: Find Your Partner), page 39
Mammal Safari, page 40
Habitats for Sale (Branching Out: Habitat Sketches), page 43
Tricky Tracks (Branching Out: Taking Tracks Home), page 47

Rain Forest: Tropical Treasures
Forest Comparisons (Part I: Forest Finds), page 11

Trees Are Terrific!
Tree Tots, page 9
Build a Tree, page 10
Twig Detectives, page 29
Get to Know a Tree, page 31
Maple Seed Makeup, page 32
A Rottin' Place to Live, page 41
Disappearing Trees (Part 2: Rain Forest In Trouble), page 54
Tree Champs, page 56

Outdoor activities from other issues of NatureScope not included in this handbook are:

Amazing Mammals, Part II
Bat and Moth, page 35
Ears in the Dark (Branching Out:Take a Bat Walk), page 41

Incredible Insects

Little Kid's Scavenger Hunt, page 6
Observe an Insect, page 10
A Bucketful of Mosquitos, page 21
Insect Bingo, page 28
Dipping for Aquatic Insects, page 30
Getting Into Galls, page 31
Six-legged Relay Race, page 37
Watch for Walking Sticks, page 37
Ant Detective, page 38
Population Count, page 39
Take a Trip, page 48

Diving Into Oceans
A Web on the Wall (A Phytoplankton Field Trip), page 26
Seaside Adventure, page 46
Plastic in the Sea (Branching Out:Clean Up Your Beach), page 60

Pollution Solution
Tons of Trash (Part 2: Surveys and Scenarios), page 25

Let's Hear It For The Herps!

Hot'n'Cool Herps, page 10
Call of the Wild (Part 2: Out at Night), page 26
Watchers at the Pond, page 30

Discovering Deserts

Evaporation Tricks, page 6
Desert Relay Race, page 28
Sunrise, Sunset (Branching Out: A Demonstration), page 30
The Desert Scramble, page 38

Appendix 2

Workshop Evaluation Summary

Workshop Evaluation Summary

I Descriptive Data

Workshop Title: Wading Into Wetlands

Workshop Location: CSUSB

Date: 4-25-92

Presenter: Wendy Nesin

Total Number Participants: 15

Number of Districts Represented: 9

Number of Schools Represented: 10

Number of Surveys Completed: 15

II Evaluation Results

Enter the number of responses in each category for the job indicated:

Elementary teacher 13 | Curriculum

Middle School 1 | Preservice Teacher

High School Teacher | Other 1

Principal

Enter the number of responses in each category:

1 K | 1 | 1 2 | 2 3 | 2 4

4 5 | 6 | 1 7-8 | 9-12 | Subjects 2

Enter the number of responses given in each category:

Usefulness of activities:

_____1 _____2 __1__3 __6__4 __8__5

Usefulness of correlations:

_____1 _____2 __1__3 __6__4 __8__5

Enter the number of responses in each category for the question "Compared to other training sessions... ?"

__4__a __9__b _____c _____d _____e

Enter the number of responses in each category for the question " After completing the workshop do you feel comfortable... ?"

_____no __14__yes

Comments and suggestions:

-limited time

-Great job!

-like materials, interesting presentation

Workshop Evaluation Summary

I Descriptive Data

Workshop Title: Endangered Species: Wild and Rare

Workshop Location: CSUBS

Date: 4-25-92

Presenter: Wendy Nesin

Total Number Participants: 40

Number of Districts Represented: 16

Number of Schools Represented: 28

Number of Surveys Completed: 31

II Evaluation Results

Enter the number of responses in each category for the job indicated:

Elementary teacher 29

Middle School 1

High School Teacher

Principal

Curriculum 1

Preservice Teacher

Other

Enter the number of responses in each category:

1 K 1 1 3 2 6 3 3 4

4 5 4 6 1 7-8 1 9-12 Subjects

Enter the number of responses given in each category:

Usefulness of activities:

_____1 _____2 __9__3 _12_4 __7__5

Usefulness of correlations:

_____1 _____2 __8__3 _11__4 __9__5

Enter the number of responses in each category for the question "Compared to other training sessions... ?"

__2__a __8__b _20__c _____d _____e

Enter the number of responses in each category for the question " After completing the workshop do you feel comfortable... ?"

__3__ no _28__ yes

Comments and suggestions:

-great resource

-good workshop for short amount of time

-I've never seen NatureScope, neat!

-Literature list, correlations excellent

-Wendy is very knowledgeable

Workshop Evaluation Summary

I Descriptive Data

Workshop Title: Trees Are Terrific!

Workshop Location: CSUBS

Date: 4-25-92

Presenter: Sotera Madison

Total Number Participants: 18

Number of Districts Represented: 9

Number of Schools Represented: 12

Number of Surveys Completed: 15

II Evaluation Results

Enter the number of responses in each category for the job indicated:

Elementary teacher 13 | Curriculum _____

Middle School _____ | Preservice Teacher _____

High School Teacher _____ | Other _____

Principal _____

Enter the number of responses in each category:

1 K | 1 1 | 1 2 | 11 3 | 11 4

1 5 | 11 6 | _____ 7-8 | _____ 9-12 | Subjects _____

Enter the number of responses given in each category:

Usefulness of activities:

_____1 _____2 _____3 __5__4 __9__5

Usefulness of correlations:

_____1 _____2 _____3 __5__4 __8__5

Enter the number of responses in each category for the question "Compared to other training sessions... ?"

__5__a __7__b __1__c _____d _____e

Enter the number of responses in each category for the question " After completing the workshop do you feel comfortable... ?"

_____no __13__ yes

Comments and suggestions:

-Great ideas for 1st grade

Workshop Evaluation Summary

I Descriptive Data

Workshop Title: Rain Forest: Tropical Treasure

Workshop Location: CSUBS

Date: 4-25-92

Presenter: Sotera Madison

Total Number Participants: 40

Number of Districts Represented: _____

Number of Schools Represented: 17

Number of Surveys Completed: 28

II Evaluation Results

Enter the number of responses in each category for the job indicated:

Elementary teacher 25 | Curriculum _____

Middle School 11 | Preservice Teacher 1

High School Teacher _____ | Other 1

Principal _____

Enter the number of responses in each category:

2 K | 5 1 | 4 2 | 3 3 | 4 4

2 5 | 2 6 | 2 7-8 | 1 9-12 | Subjects Sp. Ed.

Enter the number of responses given in each category:

Usefulness of activities:

_____1 _____2 __1__3 __3__4 __22__5

Usefulness of correlations:

_____1 _____2 _____3 __5__4 __18__5

Enter the number of responses in each category for the question "Compared to other training sessions... ?"

__6__a __17__b __2__c _____d _____e

Enter the number of responses in each category for the question " After completing the workshop do you feel comfortable... ?"

__1__no __25__yes

Comments and suggestions:

-How about a 1-1/2 hour workshop?

-Excellent presentation, good activities

-Already have NatureScope series, good!

-Excellent and easy to adapt to K grade level

-Great art projects