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ABSTRACT This is one of a series of units for environmental education developed by the Highline Public Schools. This ecology unit has been designed to be used as an individualized reading program, the duration of which is about three weeks. The purpose is to help intermediate grade elementary school pupils become more aware of their natural world and their responsibility to it. Activities include science, spelling, vocabulary, creative writing, art, drama, and social studies. The materials were tried and evaluated; evaluation data may be obtained from the Highline Public Schools. (RH)
MIND-FULL of ECOLOGY

by Sue Horton

An Environmental Learning Experience for 3rd-4th grade with an individualized reading approach. One of many "ELE PAKS" available for all areas.

Project ECOlogy, Title III, ESEA
Highline Public Schools
Department of Instruction
P. O. Box 66100
Seattle, WA 98166
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Emily Drewecky
Jeff Hase
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Nancy O. Millard, Tacoma School District

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Evaluation Results Regarding This ELE May Be Obtained by Including This Page and a Self Addressed Stamped Envelope To:

Highline Public Schools, District 401
Instructional Division
Project ECOlogy ESEA Title III
Bill Guise, Director
15675 Ambaum Boulevard S
Seattle, WA 98166
PURPOSE: This Ecology unit has been designed to be used as an individualized reading program - the duration of which is about three weeks. (You as a teacher may decide you would rather use this as a science unit rather than a concentrated reading program. Whichever you choose, the students will be afforded an opportunity to work with material on a level they can master.) The purpose is for children to become more aware of their natural world and their responsibility to it.

BOOKS: This pak comes supplied with 30 books and accompanying activity cards. There are 14 activity cards for which there are no books included in the kit - but you will probably find, many, if not most, of these titles in your own school library. This manual includes a list of the books used in this unit. This list should be given to your school librarian so that these books can be in use in your classroom while the unit is in progress. Your own library undoubtedly has other useful titles that you would like to have available to your students.

ACTIVITY CARDS: The activity cards are filed alphabetically under the book's title. Each activity card suggests two or three different activities from which the child may choose. At least one of the activities involves a language experience (a creative writing opportunity, vocabulary study, or various uses of factual information.) These suggested activities are in no way to be considered inclusive - as you will want to add some of your own good workable ideas to the ones I have suggested.

CONFERENCE QUESTIONS: You will be spending some of the class time in conference, listening to the children read and asking questions about the book's content. On the back of each activity card are questions which you can use to discuss the book's material. These are very general questions, but hopefully will be useful to you and save you the trouble of having to acquaint yourself with all of the books.

READING LEVELS: A real attempt has been made to include books which cover a wide range of reading levels. (Admittedly it is not easy to find material for those children reading below grade level.) A list is included to show which of the books have been categorized as EASY, AVERAGE, ADVANCED. There is, of course, some overlapping in these categories and children may move from one level to the other in their material selection. The activities will match the book difficulty; i.e., an easy book will have easy activities suggested for follow-up use.

RESEARCH SKILLS: Due to the short duration of this unit (three weeks) no attempt has been made to incorporate research into the activities. However, the subject lends itself well to additional research on the part of the student. You may find this is a good time to teach some of the research skills and encourage their use.

READ-ALOUD STORY: Included in the kit is a fiction book you may want to read aloud to your students. It is Big Blue Island by Wilson Gage. This is the story of a boy who moves from the city to a primitive house in the country. He's
unhappy and rebellious about his new situation - unappreciative of the offerings of nature. The Great Blue Heron changed his outlook, You might wish to read aloud to your class Spaceship Earth: Danger, Danger as to tie the class together. (This book is in your Pack as part of the children's readings.)

INCORPORATING "MIND-FULL OF ECOLOGY" INTO YOUR SCHOOL DAY

VOCABULARY: As the children become involved in these Ecology books, they will encounter many new and unfamiliar words. This would be an opportune time to begin a class, a group, or an individual vocabulary study. If a class list is kept, children could add to it as they come upon unfamiliar words. This list should be reviewed frequently as it will provide wider knowledge of the students as they learn the meanings of words others have contributed. In addition to a general group list, words could be listed in specific areas. (For instance, a class word book could be made devoting a page to each of the seven natural resources: sunshine, air, water, minerals, forests, wildlife, and soil. Words will be added to these lists as children find them in their reading.) From these charts and books could come words to be added to the weekly spelling list.

DICTIONARY: These words would also lend themselves to the teaching of dictionary skills - alphabetizing, finding words, reading definitions and diacritical markings

SPELLING: Individual vocabulary lists could also prove useful. If you are using an individual spelling program, these lists will offer a good source of meaningful words, as well as giving the children a sense of accomplishment as they see their list of new words grow.

ART: Several of the activity cards suggest an art project to express some area of ecology. You might expand this into a whole-class activity by choosing a area to depict in a MURAL. The class might break off into committees, each choosing an area where pollution is a problem, and draw PICTUREs for the bulletin board. (Air pollution is effectively shown when a picture is colored and then a FINGERPAINTING print is picked up over the picture.) POSTERS are fun to design. If a kiln and POTTERY is available to you, the children can roll clay into flat shapes and make their own "fossil" with an object from nature. BADGES or NECKLACES can be made from various media stressing the care of our world. MOBILES, COLLAGES, and your own creative ideas!

DRAMA: Is CREATIVE DRAMATICS your thing? Ecology would be a great subject to work into a play or skit to present to other rooms. PUPPETS could effectively get across an anti-littering or anti-polluting message.
CLASS NEWSPAPER: Do you have a particularly ambitious group? Would some of the students like to write an Ecology NEWSPAPER? This, too, would be something great to share with other classes.

LOCAL NEWSPAPER: The local newspaper could be used effectively throughout the teaching of this Pak. The children could clip weather maps, weather forecasts, and all articles dealing with ecology.

COMMUNITY ACTION: The class can compile a list of suggestions of ways that we can all help ease environmental problems. (The book which is included in the kit, Spaceship Earth: Danger! Danger! has good workable suggestions on pages 28, 29 and 30). The ideas that your class comes up with could be dittoed and distributed throughout the school or neighborhood. Information on pickup points is included.
BEFORE YOU BEGIN MIND-FULL OF ECOLOGY

1. Order any visual aids you will want to use.

2. Give the "Librarian's List of Mind-Full of Ecology Books" to your school librarian so that these books can be in your room. Bring to the room any other books you plan to incorporate into this study.

3. Decide what type of book you would like for the children to have as their own record of daily progress. A simple, but workable book would need:
   a) a tagboard or construction paper cover
   b) a daily progress record (number of pages read, activity worked on, etc.)
   c) a page for children to record the books they have read
   d) vocabulary pages.

4. Organize the Materials Center. On the following page is a list of the materials that will be needed for the various activities. You will find it expedient to have these materials readily available to the children. You will probably want to have someone in charge of this center to see that it is kept in order and that the supplies are not misused.

5. Decide upon a convenient location in the room to keep the books you will be using for this unit.

HAVE FUN!
MATERIALS NEEDED FOR THE SUGGESTED ACTIVITIES

- Drawing paper
- Construction paper
- Writing paper
- Crayons
- Watercolors or poster paints
- Scissors
- Glue
- Booklet-making materials (cover, lined paper, stapler)
- Old magazines
- Dowels or hanger (for mobiles)
- String
- Modeling clay
- Tape or Cassettes and Recorder
- Ditto master
- Overhead Projector
- Transparencies
<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>Publisher</th>
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<td>ABC'S of Ecology</td>
<td>Isaac Asimov</td>
<td>Walker and Co.</td>
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<td>About Insects that Help Plants</td>
<td>Gertrude Gibson</td>
<td>Melmont Pub.</td>
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<td>About the Land, the Rain, and Us</td>
<td>Terry Shannon</td>
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<td>Animals that Live Together</td>
<td>Glenn O. Blough</td>
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<td>Ants and Bees</td>
<td>Ronald E. Rood</td>
<td>Wonder Books</td>
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<td>C. W. Anderson</td>
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<td>Dorothy Childs Hogner</td>
<td>Thomas Crowell Co.</td>
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<td>Ecology</td>
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<td>Gross &amp; Dunlap</td>
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<td>Everyday Is Earth Day</td>
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<td>Forest Folk</td>
<td>Mary &amp; Conrad Buff</td>
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<td>Giant Snakes &amp; Other Amazing Reptiles</td>
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<td>How Animals Get Food</td>
<td>Bertha Morris Parker</td>
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<td>Let's Go Outdoors</td>
<td>Harriet E. Huntington</td>
<td>Doubleday &amp; Co.</td>
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<td>Little People of the Night</td>
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<td>One Bright Monday Morning</td>
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<td>Golden Press</td>
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<td>Sea Creatures</td>
<td>John Mardon</td>
<td>Holt, Rhinehart, Winston</td>
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<td>Six Great Mammals</td>
<td>Kenneth &amp; Josephine Sopis</td>
<td>Holt, Rhinehart, Winston</td>
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Soil, A Field Trip Guide
Helen Ross Russell
Little, Brown & Co.

Spaceship Earth: Danger! Danger! Danger?
Kenneth & Josephine Sopis
Holt, Rhinehart & Winston

Swamp Spring
Carol & Donald Carrick
Macmillan Co.

The Air Around Us
Margaret Friskey
Children's Press

The Only Earth We Have
Laurence Pringle
Collier Books

The True Book of Spiders
Ilia Podendorf
Children's Press

Through a Magic Glass
Solveig Paulsen Russell
Ginn & Co.

Too Much Noise
Ann McGovern
Scholastic Book Services

Up Above & Down Below
Irma E. Webber
Wm. R. Scott, Inc.

Useful Plants & Animals
Glenn Bough
Row, Peterson

What do Animals Eat?
Ruth Belov Gross
Scholastic Book Services

What is a Tree?
Gene Darby
Benefic Press

Where Does the Butterfly Go
When It Rains?
Mary Garelick
Scholastic

Who Lives in this Meadow?
Glenn O. Glaugh
Whittlesey House
# MIND-FULL OF ECOLOGY BOOKS

ARRANGED BY LEVELS OF DIFFICULTY

## EASY

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<th>Blaze and the Forest Fire</th>
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## AVERAGE

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<td>Dwight W. Follett</td>
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## ADVANCED

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This information was compiled by a 7th grade Camp Fire Girls group, "Tanki Da Kanya", from Pacific Junior High School, Mrs. John Benedict, Advisor, TR 8-7569, and under the further assistance of Cliff Maudslie, Highline Public Schools, 433-2453.

THE DAILY REFUSE LOAD OF YOUR FAMILY IS OVER 6 POUNDS!

HELP LIGHTEN THE LOAD BY RECYCLING!

GENERAL RECYCLING STATIONS

**Burien**
Rob's Texaco - 136th & Ambaum Rd., 246-1535
Buys - All recyclable beer bottles - 40¢ case
   Aluminum cans - 10¢ a pound
   Newspapers - 4¢ for 10 lbs., $8.00 a ton
Hours open - 10:00-6:00 Mon.-Sat., 10:00-5:00 Sun.

**Des Moines (and White Center, CH 4-2233)**
Northwest Reclamation Co., S. 223rd & Marine View Drive, TR 8-2431
Buys - All recyclable beer bottles - 40¢ case
   Aluminum cans - 10¢ pound
   Newspapers 4¢ for 10 lbs., $8.00 a ton
Will accept all glass food containers - no pay.
Hours open - 10:00-6:00 Monday-Saturday
They donate 10% of their proceeds to Children's Orthopedic Hospital.

**Seattle**
South Transfer Station, 2nd Ave. So. & So. Kenyon St.
Will accept all glass food containers (no window glass), newsprint and metal. No pay. Open 24 hours a day. Closed only from 5:00 p.m. on Saturday to 9:00 a.m. on Sunday. This station is run by the City of Seattle. It has an unlisted phone number. For further information call Seattle Solid Waste, 583-2780.

**Midway**
Cascade Recycling, 23898 Pacific Highway So.

Rainier, Olympia and Lucky - 40¢ case
Heidelberg, Reinlander and Blitz - 25¢ case
Also, aluminum cans - 1¢ for 2 cans
Open Monday-Friday, 10:00-7:00, Saturday and Sunday 9:00-6:00. (Call for group rates).
GLASS

General Instructions: Glass should be clean, sorted as to color (white, brown, or green) and lids and metal rings should be removed. No window glass please!

Northwestern Glass, 5801 E. Marginal Way, RO 2-0660. Recycles any beverage glass 1¢ a pound. Open Tues. & Thurs., 9:00-2:00, Sat. 8:00-4:30.

Rainier Brewing Co., 3100 Airport Way So., MA 2-2600. Recycles Rainier beer bottles, 50¢ per case. Open 9:00-6:00 Monday-Friday. Also buys aluminum cans 10¢ a pound.

Glaser Beverage, 2300 26th So., EA 3-2932. Will recycle all kinds of glass or glass containers. Pays 1¢ per pound. Open Monday, Wednesday and Friday 10:00-2:00.

GLASS FOR BOY SCOUTS

The following places are collecting glass for Boy Scouts. They accept all glass containers and are open any time. For further information call PA 5-5200.

A & P, Rainier So. & Empire Way So.
Govmart Bazaar, 501 S. W. 148th
Thrifty Drugs, So. 120th & Des Moines Way So.
Westwood Village, 2500 S. W. Barton St.

RECYCLING FOR RAINBOW

Herb & Leona Miller, 2051 So. 223rd, Des Moines, TA 4-2308. Will accept all glass containers (no medicine bottles). Also newspapers and old telephone books.

The average person uses 1 bottle per day. The average family of four uses an excess of 1,600 bottles yearly. Do you throw yours away? Why?

OIL IS YUCKY!

Crank case oil causes pollution when it is poured into sewers or is burned. The following service stations will accept used crank case oil for a fee of 25¢ for 2 gallons and 10¢ per gallon for additional amounts.

Chevron - 2555 15th Ave. W.
Dale Yust - 2437 California S. W.
Enco - 9235 16th Ave. S. W.
Rocket - 6217 Rainier Ave. So.

The oil is re-refined at Superior Refineries, Inc., Woodinville.
PAPER

General Instructions: Paper should not include magazines or sack paper. Preferably have paper tied in 1 foot bundles.


Wash. Excelsior Co., 531 So. Portland St., Seattle, RO 7-5388. Newsprint only. Tie in 50 lb. bundles. Pay $9.00 per ton. Open Monday-Friday 8:00-5:00, Saturday 9:00-12:00. (Hard to find - call for directions).

Highline Sportsman Club, 11220 26th S. W., CH 4-7258. Newsprint only. Call for pickup. No pay.

Mormon Church (church of the Latter Day Saints), S. W. 142nd & Ambaum Blvd. S. W. Leave newsprint only at home of Mr. Sims, 14608 18th S. W., CH 4-3539 or by garage at 13717 6th Ave. S. W. Proceeds used for needy church members. Call CH 2-3405 or CH 2-9979 for information.

Old magazines are needed at old folks homes. Following are some that want them. They prefer ones with bright pictures.

- Olympia Crest, 21428 Pacific Highway So., TR 8-2042. Open 8:00-4:00.
- Seatoma Convalescent Center, 2804 S. 224th, Kent, TA 4-0600. Open 11:00-3:00.

RECYCLE CLOTHES

Take useable clothes to the Highline PTSA clothing depot, a small portage directly behind the Highline School District's former Administration building at 253 So. 152nd, Monday 9:00-12:00 and Thursday 9:00-2:00. Call Mary Deloney, TR 8-8056 or Bea Lennel (Highline Association of Educational Secretaries Welfare Committee) CH 4-2923. These clothes will be redistributed in the Highline area. Thanks.

VALUE VILLAGE

The Value Village at 29033 1st Ave. S. needs your extra paper bags and coat hangers. Also needs donations of clothes, furniture, household items, etc. Proceeds go to the Northwest Center for the Handicapped.
METALS

General Instructions: Cans should be cleaned, labels removed, ends removed and cans flattened.

American Can Co., 2601 Elliott Ave., MA 3-8100. Buys all types of food containers (steel, aluminum and combinations). Open 8:00-4:30 Mon.-Fri.

Cascade Recycling, 23898 Pacific Highway So. Buys aluminum cans, 1¢ for 2 cans.

Lang Distributors, Inc., 2415 Airport Way So., 622-3030. Buys aluminum cans - 10¢ per pound. Open 10:00-2:00 Monday-Friday.

Pacific Iron & Metal, 2230 4th Ave. So., MA 3-7236. Buys all non-ferrous metals (no iron). Takes brass, aluminum, copper, lead and zinc. Open 8:00-4:30 Monday-Friday, 7:00-12:00 Saturday.

Puget Sound Salvage, 2960 4th Ave. Sq., MA 2-0359. Buys copper, lead, zinc and brass. Open 8:00-5:00 Monday-Friday, 8:00-12:00 Saturday.

Rainier Brewing Co., 3100 Airport Way So., MA 2-2600. Buys aluminum cans - 10¢ per pound. Open 9:00-6:00 Monday-Friday.

Reynolds Reclamation Center, 923 So. Bayview, 622-0433. Buys aluminum cans - 10¢ per pound. Open 9:00-4:30 Tuesday-Saturday.

Sid Eland, Inc., 1022 E. Marginal Way So., RO 2-2211. Buys aluminum cans - 10¢ per pound. Open 1:00-5:00 Monday-Friday.

Sternoff Metals - Seattle Plant, 7201 E. Marginal Way So., RO 2-8100. Buys all non-ferrous metals (no iron or steel). Open 8:00-4:30 Monday-Friday.

Sternoff Metals - Renton Plant, 7430 So. 180th, BA 6-7400. Buys iron and steel. Takes old car bodies: remove gas tank, seats, floormats, and tires. Must have clear title. Pays between $8.00 and $15.00 according to weight.

Prices on all metals but aluminum vary as to type and grade. Call for prices.

NEIGHBORS IN NEED

While recycling don't forget Neighbors in Need. Many items including food, clothing, furniture, bedding and toys are needed - especially for babies and small children. For further information call Helen Gilmore at TR 8-8406.

Des Moines Food Bank at Des Moines United Methodist Church, 22225 9th So., TR 8-8301.

Glendale Lutheran Church, 13455 2nd S. W., CH 4-9400.
For your convenience the films used in this ELE are listed on this tear out sheet. Simply add the dates requested and mail to the Instructional Material Center, ERAC.

Project ECOlogy

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Project ECOLOGY

INSTRUCTIONAL MATERIALS - HIGHLINE PUBLIC SCHOOLS

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If you are a fruit grower and own orchards of trees. Tell which tree you would like to have living trees and why.

Choose "insect encyclopedia". Illustrate each insect. Write a sentence under each insect under its picture. (Subjects in an encyclopedia are in alphabetical order.)

ACTIVITIES:

1. Make your own Ecology letter book by using the letters in your name. Can you think of ecology words which are different from the ones the author used? (Paper folded in half and stapled together will make a good book.)

2. Choose 5 of the ABC words in the dictionary. Write the page number where you found each word. Read the definition, then use the word in an ecology sentence.
For each letter of the alphabet two ecology-relating words are named and explained. They range from known words as garbage and weather to the difficult as biome and quagmire.

There were many difficult words in this book. Tell about some of the new words you learned from it.

Possibilities include:
- algae - simple water plants
- biome - a part of the earth that has the same climate
- carbon monoxide - gas produced by autos
- drought - a period without rain
- food chain - one life form eating another
- herbivore - plant eating animal
  etc.

It is easy to think of insects as harmful. However many are beneficial to plant growth by loosening soil, putting food into the soil, eating harmful insects, and carrying pollen.

1. Tell how insects can help plants.
   - Ants loosen soil; termites help wood decay; springtails and grubs break leaves into small bits to make soil; dragonflies, ladybirds, lacewings eat harmful insects; bees and wasps carry pollen.

2. Explain how termites are both helpful and harmful.
   - A termite chews on dead wood. In a forest this becomes food for plants. The children should be able to reason that this process is damaging to wooden buildings.

3. Explain how and why an insectary operates.
   - An insectary is an insect farm where beneficial insects are raised. They are then shipped to farmers and gardeners who will use them to rid their crops of aphids.
You are a beekeeper. Tell someone the things that go on inside the hives. (Be sure you have written the answers to some of the questions.)

This story:

leavers were looking for a new home. They found a lake surrounded by a few trees. Then... They went on because...

five questions about ants.

...these questions to someone who has read this book. (Be sure you have written the answers to some of the questions.)

ACTIVITIES:

1. Draw a picture of one of nature's cycles.
2. Cut out several pictures of food from a magazine. Explain how each one depends on the soil. Add your commercial to the class.
3. Write a commercial telling people one way to take care of the soil. Add your commercial to the class.

Nature has a delicate balance. Soil is the starting point of the food chain and must be conserved. Nature's soil cycle adds material to the soil to enrich it (plants of all kinds, animal droppings, dead animals). Sod keeps soil from blowing or washing away.

Another cycle is the rain cycle: evaporation, cloud formation, condensation, and over again.

1. **Why is soil very important to all living things?**
   It is the beginning of the food chain.

2. **Why is water important to all living things?**
   Plants and animals both depend on an ample supply.

3. **Explain the rain cycle.**
   Water evaporates from the earth and clouds are formed. As the air cools, the water condenses and returns to earth.

4. **What is nature's balance?**
   All living things depend on other living things.

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Some animals live together in groups and they all work to help each other. In a beehive there are workers, drones and a queen - each with special jobs. Beavers, cooperatively build and repair dams and gather food. Ants live in a nest with a queen. A king and queen termite start a new colony of workers and soldiers.

1. **Describe how ants, beavers, bees, or termites work together.**
   
   Bees: **Workers** gather food, keep the hive clean, guard it, make wax. **Drones** mate with queen who lays eggs.
   
   Ants: **Workers** build tunnels and rooms in the nest, find food, keep the nest clean. The **queen** lays eggs.
   
   Termites: **King** and **queen** have a family of **workers** and **soldiers** (guards).
   
   Beavers: Cooperative effort in dam-building and food-gathering. They signal danger to each other.

2. **What would happen if some refused to do their job?**
   
   The **community** wouldn't function properly. Some would die.
Choose one of the insects you find interesting. Make a fact about this insect. Your booklet where others will read it.

If you were an entomologist, an entomologist who studies insects, which insect would you choose to special research on? Why this insect is interesting to you.

Make a large diagram of one or more insects. Label the parts he insect's body.

ACTIVITIES:

1. **Draw a large diagram of an ant.** Label each part of its body. You will have to read pages 6 and 7 very carefully to be sure you label them correctly.

2. **Read carefully how the author tells you to keep ants.** Make a simple ant nest at home tonight. Bring it to school. Tell the class what you are going to do to keep the ants alive.

3. **Fold a large piece of paper into 4 parts.** In each section draw a stage in an ant's life as he changes from an egg to an adult. Label each picture.
A factual book about ants and how they live. The "food trail", life in the colony, stages of life are interestingly and simply described. Throughout the book are many diagrams.

1. What are some of the things ants eat?
   Ants eat juice from flowers, seeds, juice from plant lice, dead insects, etc.

2. What is the work of ants? Describe what goes on in an ant colony.
   Each colony has a queen. The males are drones which die after mating. The queen lays eggs and a colony is started. Worker ants get food, dig tunnels, clean the nest and care for the baby ants.

This book deals with several insects: bees, wasps, ants and termites. The student may have chosen to read about only one or two of them. Try to establish if the reader understands the part these insects play in the balance of nature.

Bees: Collect pollen on their hind legs and carry it from plant to plant. Make seed production possible.

Wasps: Feed on certain plant-destroying insects.

Ants: Sometimes used by farmers to help clean out harmful insects. (Hunter ants)
Choose one of the birds you see in your yard. Make a booklet about this bird. Include a picture you have drawn of it. Tell what you learned about this bird.

Draw a large diagram of a bird's body. Label each part. Display your diagram.

 Pretend you have seen someone in your neighborhood shooting birds with a BB gun. What would you say to this person? How would you convince him that this is unwise?

ACTIVITIES:

1. Make a chart showing the orders of insects. Page 32 will help you. Put your chart where your classmates can see it.

2. Pretend you are an entomologist, a scientist who studies insects. You are going to do some special research on an insect. Write a paragraph telling which insect you would study and why. What do you want to learn about this insect?

3. A friend of yours feel all insects should be destroyed. Write a letter to your friend telling him what you think of his idea and why you feel that way.
Insects are everywhere - almost a million different kinds have been named. They are the only creatures with six legs and a jointed body. It's skeleton is on the outside and most insects have an amazing number of small eyes. Insects have interesting ways of protecting themselves - their predators are many. Stages of life are larva, pupa, adult. They range in size from the Atlas Moth with a wingspread of 12 inches to tiny no "see-ums". Some insects - like the bees and ants - live in colonies. Insects have caused much damage by destroying crops and carrying diseases. Other insects are helpful as pollen spreaders and insect controllers.

1. Tell what insects are like.
   Six legs, compound eyes, jointed bodies, stages of life, etc.

2. Do insects help us at all? How?
   Yes. Bees give us honey. Insects spread pollen. They eat other insects. Some "clean-up" rubbish.

3. Tell some of the things you learned about insects.
   Answers will vary.

This book deals chiefly with individual birds from the various habitats of the home ground, orchards, fields, woods, ponds and big bodies of water. Nesting habits, type of food eaten and any individualistic characteristics are noted. The parts of the body are illustrated along with the types of beaks, feathers and feet. The chain of life - how every living thing is of value to some other living thing - is touched upon briefly.

1. Choose a bird (robin, woodpecker, owl, crow, etc.) to tell what you have learned about it.

2. Tell about the chain of life in a wildlife community.
   Every living thing contributes to other living things. Plants are eaten or are used to build homes in. Some animals eat smaller animals which, in turn, eat other smaller animals.
ACTIVITIES.

1. Draw a series of pictures showing how a forest is born - beginning with a pond. Use these pictures for a bulletin board display or use tape to attach the pictures together to make your own "filmstrip." Be ready to explain to the class what changes have taken place in each picture.

2. Draw pictures on a transparency to show how a forest is born. Show your transparency on an overhead projector. Tell the class about each picture.

3. We all have a responsibility to take care of our forests. Make a poster to put in your classroom or the hallway telling others of ways to take care of forests. (preventing fires, not littering, etc.)
Our earth is changing all the time. A pond becomes a marsh. The marsh fills in and trees begin to grow - now it is a swamp forest. The type of forest which grows from a filling pond depends on the different kinds of plants and the climate.

2. Tell some of the ways seeds may reach new locations.
   Wind
   Birds carry seeds on their feet and feathers, others pass through their digestive tracts.
   Animals' fur.

2. Explain how a pond changes into a forest.
   A pond begins to fill in with vegetation. It becomes a marsh. Trees begin to grow. Finally it becomes stable and is a forest.

TITLE OF BOOK: Blaze and the Forest Fire  AUTHOR: C. W. Anderson

Billy and Blaze are out riding when they discover a fire. They are able to get help in time to save the forest.

1. How did the fire start?
   Someone had built a fire in dry brush.

2. What part did Billy and Blaze play in getting it out?
   They were able to quickly get help from farmers.

3. How did the people show their appreciation?
   The farmers got Blaze a new bridle; Billy, boots and breeches.

4. Why is a forest fire a thing we try very hard to prevent?
   The children should be able to tell of the destruction wrought by a forest fire to animals, their homes, etc.
ACTIVITIES

1. Draw a large diagram of an earthworm. Label the parts.

2. On page 18 you are told how you can watch an earthworm at work. Copy the directions so that you can make this experiment at home. Bring it to school to share with the rest of the class. Be prepared to explain how an earthworm is a gardener's friend.

3. Pretend you own an earthworm farm. Tell how you would do your work and who would be your customers.

Draw examples of several different kinds of habitats where the plant and animal life you would find in each.

This book contained much information about ecology. Jot down some of the things you learned from reading this book. Share your newly-gained information with your classmates.
Although the earthworm is a simple creature it is very important. An earthworm cannot tolerate the sun. Air is taken in through its skin. It reacts to the waves of light. Earthworms actually eat and digest soil. Castings, or earthworm manure, can be seen on top of the ground.

The earthworm is hatched from an egg which is encased in a cocoon with several other eggs. They can live, barring accidents, twelve years. Earthworm’s enemies are frogs, birds, moles, centipedes, and man.

1. Why are earthworms important to us? They enrich the soil upon which we depend for food.

2. Explain why an earthworm is called nature’s plow. As millions of worms dig through the ground, they make holes. Air and water can enter the holes. Everything the earthworm eats is being turned into manure to enrich the soil.

3. Explain how an earthworm has adapted to its underground environment. It has no eyes or ears but reacts to light waves. It takes air through its skin.


All things in nature are tied together as in a chain. One cannot eliminate one link of this chain without affecting the whole. Likewise, habitats are connected. If something happens to one species habitat, and consequently that species, other species and their habitat are affected.

Different areas with different plant and animal life are called biomes. Ecology shows us how habitats of biomes fit together. This book takes us through the biomes of the forest, grasslands, deserts, mountains, and coastlines.

The insecticides have caused problems by upsetting nature’s balance. Scientists are seeking a biological control. We are seeing that man is part of the life chain and must cooperate in keeping his world in balance.

1. Explain a food chain or chain of life. An example of food chain:
   a) Butterfly eats flower nectar
   b) Dragonfly eats butterfly
   c) Frog catches dragon fly
   d) Snake eats frog
   e) Hawk catches and eats snake

2. Explain the balance of nature. All living things depend on each other. If one is affected or eliminated, other life is affected.

3. What are some of the problems brought about by DDT? What are alternatives? Problems: Kills life other than insects. Animal life that lives on plants sprayed with DDT are affected, other animals eat affected animals, etc. (Eggs become thin and easily broken. Seals are born dead.)
   Alternatives: Biological control - special cultivation practices, predators and parasites to control insects.
Underline the animal that you have seen or have been visiting in your forest.

Write a paragraph telling how we help take care of forests so the animals will have homes (habitat) to live in.

Write a letter telling about your job.

Draw a picture showing one type of pollution. Be ready to tell others in your group how it could have been prevented.

Fold a large piece of paper into four sections. In each section, draw a picture of something that pollutes our land.

Make a poster to be put in the hall urging people to stop polluting.
The children in the story discover how air and water can become polluted. They see what happens when too much junk is put on the land. Every day must become Earth Day so that we can find ways to clean up our world. Children can help.

1. What is pollution?
The dirt and gases that are getting into our air and water and making them unclean.

2. What is it doing?
It is destroying part of our earth.

3. Name three things you can do to help stop pollution.
1) Tell others about pollution.
2) Learn about it.
3) Put up posters.
4) Be sure to make every day Earth Day and remind others to do so.

4. What is Earth Day?
A special day set aside to clean up our earth.
**ACTIVITIES:**

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1. Make your own Reptile Information Sheet. Write the names of several kinds of reptiles (page 62 has a good list). After each name write a sentence telling something about that reptile. Put your information sheet on the bulletin board so others can learn about reptiles too.

2. Pretend you are an ophiologist; a scientist who studies snakes. Write an article explaining to people what would happen if all the snakes were killed.

3. Make a REPTILE chart showing a snake, a lizard, a turtle, and an alligator. List the ways these reptiles are alike.
Reptiles are a very old family. Only four kinds are left: snakes, lizards, turtles, crocodiles. They are cold-blooded animals and consequently not found in very cold regions. All animals play a part in nature’s plan—reptiles are an important part of the plan.

1. Explain how reptiles are all alike. Cold blooded, body covered with scales, important to nature’s plan, etc.
2. How are snakes useful? They eat rats and other pests.
3. Tell some of the facts you learned about individual reptiles.
   - Coral snakes: poisonous
   - King Cobra: largest of poisonous snakes
   - Anaconda: biggest snake
   - Gila Monster: only poisonous lizard
   - Gicho: loses his tail to a predator
   - Chameleon: changes color
   - Monitors: largest lizard
   - Galapagos turtle: very large—can live 200 years
   - Crocodiles: very dangerous
   - Alligator: loud voice
4. What happened after people killed many alligators? Why? Poisonous snakes grew in number because alligators were predators to them.
5. Do you think it’s wise to kill all of any animal? Why? Nature’s balance is destroyed.


title of book: How Animals Get Food

All animals must have food and some are plant eaters and some eat other animals. People feed some in homes, farms and zoos. Wild animals find their own food.

1. What are some animals that eat plants? Insects? Other animals?
   - Plants: porcupine, butterfly, hummingbird, chipmunk
   - Other animals: mole, starfish, owl, tiger, walrus, lobster and crab, raccoon, lion, sailfish, polar bear.
   - Insects: turtle, bat, chameleon, praying mantis, spider.

2. What are some special characteristics animals have to help them get their food supply?
   - Giraffes: long necks
   - Lions: sharp claws
   - Walrus: long tusks for digging, etc.
a footprint chart. Label an animal's prints. Display chart for others to see.

Write animal riddles to ask of your classmates. Be sure you tell enough about the animal so others can guess who it is. Tell where the animal lives, what he eats, how large he is, and what his home is like.

Make a clay model of one of the animals in your book. Write a paragraph giving information about this animal.

ACTIVITIES:

1. Draw a night picture showing the things Joe saw in the night.

2. Write a story about a time when you went out in the night. What are some of nature's sounds you heard? What did you see?

3. Make a list of the animals you would be more apt to see at night.
Joe woke up in the middle of the night to hear sounds coming from the meadow. He and his cat investigated and found the sounds that belonged to the night were those of flying squirrels, raccoons, skunks and an owl. Joe would like to belong to the night but he just can't stay awake.

2. **Who was making the noises Joe heard?**
Squirrels, raccoons, skunks, and an owl.

2. **What did Joe see when he took a walk with the cat?**
The above animals - along with a sleeping cow, calf, and hen.

3. **Why were the skunks and raccoons afraid of the owl?**
The owl is an enemy of these animals.

4. **How did Joe feel about the little people of the night?**
He would like to be one of them if he didn't get so sleepy!

### Title: Mark Trail's Book of Animals

**Author:** Ed Dodd

This book gives a description of the life of nineteen mammals. Included are tales of how they have been hunted by man.

1. **Name some animals which eat other animals.** What did the animals which were eaten eat? Can you trace it back to a plant-eating animal?

   Possible answers are: lynx, cougar, wolf, coyote, fox, wolverine, badger, raccoon.

   Tracing back to dependency on plants: wolf rabbit plants.

2. **How does a fox help the farmers?**
   He eats many rats and mice which are crop-destroying.

3. **Can you think of other helpful animals?**
   Children might mention badger (rodent eater), fox, coyote. (They may have the understanding of the balance that predators play.)
Under the picture, how he built his home, you are a beaver. Write a story about a day in the life of a beaver. Did you have any how escapes? What did you write about your story exciting.

1. Make a chart of animal footprints. Label the prints.
2. Make two lists on a piece of writing paper. Put these headings on your paper: Plant eaters. Write the names of animals which belong in each list. Animal eaters.
3. Make a clay model of one of the animals you read about. Write a paragraph telling what you learned about this animal.
Facts about twenty mammals are told under separate headings

1. Name some plant-eating animals. Animal eaters.
   - Plant eaters
     - caribou
     - deer
     - mountain sheep
     - porcupine
   - Animal eaters
     - Arctic fox
     - otter (fish)
     - bobcat
     - ring-tailed cat
     - armadillo (insects)

2. What are some of the ways animals protect themselves?
   Odors, keen senses, protective colorings, speed, etc.

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The activities of Barnaby are followed beginning with his life as a young beaver. Three main adventures are told. Repair of a damaged dam, Barnaby's capture and removal to another pond where a dam is needed, and the building of a dam in the new location. Many details of a beaver's life can be learned.

1. Describe the type of habitat a beaver would choose.
2. How does a beaver build a dam?
   - Mud, stones, sticks are laid across. Larger material is laid on this.
   - Branches are interlaced for strength. Mud and grasses are used to plaster places where water flows through. Several passages are made. The water in the new location?
3. Why did the men capture Barnaby and take him to a new location? How did he and the other beavers help?
Draw a picture showing some of the beautiful things from nature that you saw on your way to school this morning.

2. Which is your favorite season: spring, summer, fall, or winter? Write a short story telling why it is your favorite season.

3. Divide a large sheet of drawing paper into four parts. Show how the same tree would look in the four seasons.

Plants, Animals, and Us

1. We are many kinds of plants. Find as many pictures of different kinds of plants as you can. Paste them on a piece of construction paper. Did you make an attractive page?
This is a very easy book which tells what a child saw during the week: grass, flowers, trees, birds, bees, worms, and an ant.

You may feel reading it through to you would be adequate. Or questions such as "What was seen?" "Why did he see all these things?", etc. could cover the content.

There are a million kinds of animals in the world and hundreds of thousands of different kinds of plants. People, though, are built very much alike with the respiratory and digestive systems, muscles, skeleton, and circulatory systems. Our bodies must have proper food and rest. All living things depend upon soil, water, and air.

1. In what ways do people have the same needs as animals? They must have food, water and air.

2. Give some examples to show that we eat different parts of plants: seeds, leaves, roots, stalks.
   - Seeds: corn, beans, etc.
   - Leaves: cabbage, lettuce
   - Roots: carrots, beets
   - Stalks: celery

3. What are some of the ways we can take good care of our bodies? Proper food, rest, fresh air, etc.

4. Which are some of the insects that are our friends? How do they help us? Honeybees carry pollen. Beetles are cleaners. Praying mantis and ladybugs eat harmful insects.
Draw a picture of an underwater scene on a piece of paper. It can be a ripply surface, the water, or the deep sea. After you've drawn your underwater scene, color it with crayons or markers. Does your picture look like a real underwater scene?

If you are a deep sea diver, you are going to offer living lessons to others. Write an article for a newspaper, trying to convince others they should take your lessons.

Would you like to be a diver? Write a paragraph telling why.

ACTIVITIES

1. Make your own pond dictionary. Write the words in alphabetical order. Then, write the definition beside them. You may want to draw small diagrams of some of the words. Use these words: plankton, photosynthesis, chlorophyll, algae, protozoans, rotifers, heron, kingfisher, muskrat.


Title of Book: Sea Creatures
Author: John Marden, Winston
Publisher: Holt, Rinehart, Winston
TITLE OF BOOK: *Pond Life*  
AUTHOR: Alexander L. Crosby

Ponds are made in many ways. All have many plants and animals living in and on it which depend on each other for life. All of the life depends on the sun, the soil, and the water.

The author takes us to his pond where we meet the creatures who live there - frogs, salamanders, insects, reptiles, birds, and muskrats.

1. **Tell how the plants and animals of the pond depend on each other.**
   The food chain is at work here - starting with plankton and algae and all the little creatures that feed upon them.

2. **How does sunlight help a pond?**
   The plants use sunlight to make food. Without it, plants would die and many creatures would starve.

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TITLE OF BOOK: *Sea Creatures*  
AUTHOR: John Mardon

An underwater swimmer describes his gear, technique, and sights in the sea.

1. **Describe some of the things that can be seen underwater.**
   Animals such as stingrays, polyps, coral, parrot fish, starfish, sea urchins, octopus, crabs, barracudas, wolf fish, etc. are mentioned. (Perhaps the students have seen several of these in an aquarium.)

2. **Could the beautiful things under the sea be ruined? How?**
   Although not specifically mentioned in book, the child should be able to understand the hazards of water pollution to all forms of sea life.
ACTIVITIES

1. The author has compared the forest to a tall building. On a large piece of paper, draw a tall building and divide it into 4 stories. In each part of the building, draw pictures of things you would find in similar spots in the forest. Start with the basement and end with the very top floor.

2. Pretend you are an animal living in the forest. Write a diary page telling what happens to you in one day. Don't forget about the other animals you would see or the plants you might eat or use in some other way.

3. Create a scientific chart showing mammals you have learned about in class. Use a mammal encyclopedia. On a rate sheet of paper, list the mammals in the order you have learned. Use a scientific chart showing order, family, food, and habitat. Remember to put your pages in alphabetical order.

4. Add other mammals to your chart.

5. You have learned about some mammals. Have you learned about any other mammals?
The forest is compared to a tall building. The basement contains underground animals and decaying materials. The ground floor (forest floor) grows many plants and provides a home for most animals. The top floor is home to birds, insects and climbing animals.

1. What would you find in the "basement" of a forest? Ground floor? Top story?

   Basement: dead leaves, worms, mold, seeds, moles, hibernating animals, etc.
   Ground Floor: fern's and wild flowers, reptiles, deer, skunks, etc.
   Top Story: birds, climbing animals, insects.

2. Explain how plants and animals in the forest are linked together to form a community.

   Birds eat insects and caterpillars which would otherwise multiply and destroy the forest. (The woodpecker, scarlet tanager, and ladybird beetle were used as examples.)

This book explains how the animals fit into the animal world: kingdom, phylum, and class. Lions, zebras, rhinoceroses, elephants, hippopotamuses, and giraffes are described - their habitat, eating habits and adaptability.

2. The mammals you read about are in danger of becoming extinct. Why? What is being done to protect them?

   Lions: Indian government is protecting from hunters.
   Zebras: Many natural enemies. Natural protection from enemies is speed.
   Elephants: Killed for ivory tusks
   Rhinoceroses: Hunted for their horns which are believed to have magic powers.

3. Which of these mammals did you find most fascinating? Tell what you learned about them.

4. Which of these mammals eat plants? Which other animals?

   Animals: lions
   Plants: zebras, rhinos, elephants, hippos, giraffes.
Design a poster for the hall or classroom showing the things that tute our water, air, and landscape. Use words on your poster saying people to stop polluting.

Design badges telling people not to pollute. Wear one of the badges and pass the others out to other people to wear. (Would the principal or librarian like people to wear one?)

Prepare a list of ways we can help solve the pollution problem. Put your suggestions on a ditto and have several copies made. Pass these suggestions to people in your neighborhood.

**ACTIVITIES**

1. Aluminum foil, glass, and plastic do not decay. Go out on the playground near your classroom and see if you can find some of these materials.

2. Divide a piece of paper into 2 sections. On one section write "Things that will make soil" and on the other, "Things that will not decay." Find examples to place on each side. (You may want to use glue to hold them in place.)

3. Pretend you are a big rock. Write a story telling what could happen to you to make you into soil.
The children are encouraged to find out about soil by taking a field trip. Changes have come about in soil through temperature, water, plants and animal action and decay, etc. The interaction of plants and soil is explained.

1. Name some ways rock is made into soil.
   Broken by freezing, rubbing against other rocks, moving water, etc.

2. Name several things that help build soil.
   Decaying plants and animals. The action of earthworms and insects.

3. Define: decay, organic, soil
   decay - plants and animals decomposing
   soil - earth made up of broken rocks and organic matter
   organic - plants and animals and their waste products

Our earth is compared to a spaceship - but one that is in danger because of the problems man has created. The biosphere (where life is found) is carefully balanced. Pollution has upset this balance.

1. How is water self-cleaning?
   Plants in water give off oxygen which is used by bacteria. Bacteria turn waste back into useful chemical.

2. How do we pollute water?
   Sewage, chemicals, warm water which kills plants, etc.

3. What did you learn about our drinking water?
   Water for drinking comes from where we put our wastes. It must be cleaned first by adding chemicals.

4. What is landscape pollution?
   Garbage, litter, trash, etc.

5. How do we pollute air?
   The wastes we pump into it: auto exhaust, burning of all kinds, factories, etc.

6. What are some things you and I can do to help the pollution problem?
   a) You can plan projects to inform others, and better inform yourself.
   b) Recycle
   c) Think about non-polluting recreation.
   d) Save fuel and electricity whenever you can.
   e) Help keep your community clean etc.
ACTIVITIES

1. The authors of this book must have thought a swamp is beautiful. Draw or paint a swamp scene. Show in your picture something that you think is beautiful in a swamp.

2. Write a poem about a swamp. Choose as many "beautiful" words as you can.

3. Fold a piece of writing paper in half to make two columns. At the top of one column write PLANTS and at the top of the other write WILDLIFE. Under each heading list the plants and wildlife you would find in a swamp.

Have you ever lain outside and watched the clouds? What shapes do you see? Could you see animals, or people, or castles? Cut out of white paper some cloud shapes you have seen and paste them on a piece of blue paper.

Remember, the words in a dictionary are in alphabetical order.

Write your own weather words and after each write its meaning. (The table of contents in the front of the book is a good place to look up your weather words.)
Swamp Spring

The authors have attempted to develop an appreciation for the swamp as a part of nature's contribution. The children should be tested in an attitudinal manner to see if they understand how a swamp can be appreciated.

1. What might you see in a swamp?
   - Blackbirds, ducks, snakes, frogs, beavers, raccoons, etc.

2. Do you think we should take care of swamps?

3. Who depends on swamps?
   - The above mentioned animals make their home there eating swamp plants or other animals.

The Air Around Us

Air makes a band around the earth. This air spreads sunlight throughout the earth and protects us from the sun's burning rays. It is made up of gases. Wind is moving air - warm air rising and cool air moving in to take its place.

Cumulus, cirrus, and stratus are types of clouds. Lightning is electricity moving through air. Fog is an earth cloud, heavy with water vapor.

1. Describe some of the wonders in the air around us.
   - Colors in the light, sunsets, band of air, etc.

2. What is wind?
   - Moving air: warm air moves up and cool air comes in to take its place.
   - Hurricane: a storm of heavy wind that forms over water.

3. What is lightning?
   - Electricity which builds up in a cloud. When a cloud gets too full of electricity, a path is found to earth or to another cloud.
your own jacket for this

A spider can't talk, but if they
what might a spider say
itself? Write a story
what you think it would

And that Mr. Ames, a scientist,
vented a spray to kill all
earth's spiders. Write
letter telling him what
think of his idea.

ACTIVITIES.

1. Write a letter to Mr. Pringle, the
author, telling him what you think
of this Earth and what you are
doing to help take care of it.

2. Interview two adults. Ask them
what they feel should be done to
solve the pollution problem. Write
down what they tell you.

3. Several cycles are shown in your
book (pages 8, 51, 62). Study
these cycles. On a large piece of
paper draw a diagram showing the
cycle. Explain to your classmates
how the cycle operates.

Spaceship Earth is threatened by technology and over-population. The soil's minerals are being used up. The chemicals which pollute our air affect humans and plants. The car is our greatest polluter. Detergents and sewage have created problems in our lakes and streams. Many of our throw-aways are non-decomposing - recycling, hence, is a necessity. Many pesticides are biocides, affecting many forms of life. Man has caused many animal species to be in danger of extinction. Consequently we must concentrate on conservation to preserve this beautiful earth - the only one we have.

This book deals with problems in our earth that could destroy our environment. Since it covers complex subjects, it would probably be best to have the reader share his newly gained insights with you.

Spiders differ from insects in that they have eight legs rather than six, two body parts rather than three, and have no feelers. Most have eight eyes. Spiders eat other animals - insects mainly, but some catch and eat tadpoles and birds. Spiders travel in several ways: some jump, run, walk or are blown through the air. Spiders protect themselves by running fast, biting, protective coloration, playing dead, or catching an enemy in a web. Most spiders are helpful to us because they eat harmful insects. Sometimes, however, they can be harmful as a few are poisonous. Spiders skilfully build several kinds of webs. The silk is used for web making, traveling, egg cases.

The chapter titles in this book are written as questions, therefore the table of contents, pages 4 and 5, provides a good source for questioning.
Pollution is a problem. Make a picture showing things you thought made too much noise.

Listen to the sounds around you. Make a list of everything you thought made much noise. Quietly for a few minutes.

Make a list of everything you thought made much noise. Quietly for a few minutes.

1. Cut out a magic glass shape out of construction paper. Draw the roots of the tree in the magic glass, then tell what roots do for a tree.

2. Pretend you are a tree, write a "Day-in-the-Life-of-a-Tree" story.

3. Fold a large piece of paper into 4 parts. Show how the same tree will look in Spring, Summer, Winter, Fall.

4. Draw a line under things you thought made much noise.
If we had a magic glass we could better examine a tree. We would be able to look underground and see the network of roots. We could look into the bark and see how water rises up the tree. We could see how leaves make food and how they change color.

1. Why do trees have roots?
   To take up food and water.

2. Tell why root hairs are the most important part of the root system.
   They twist around bits of earth and soak up the water.

3. Define chlorophyll.
   This is the green-colored material in leaves which makes plant sugar (tree food.)

Peter is an old man who was annoyed by the everyday noises around him. (Bed creaking, floor squeaking, etc.) A wise judge had him fill his home with noisy animals. Only then did he appreciate the relative quiet of his former life.

1. Why did the wise man tell Peter to get all those animals? Did it solve his problem?

2. What things do you hear in a day that make too much noise?
Make a list of all the things you have used today which are made of wood. This will help you see how very useful trees are.

Make a poster showing several animals help us. Make a table for your poster.

ACTIVITIES:

1. Fold a large piece of drawing paper into eight parts. Draw a plant in each square showing how a plant is "up above and down below". Label each picture with the name of the plant.

2. From an old magazine find as many pictures of different kinds of plants as you can. Paste them on a piece of paper to make a collage. Try to learn the names of the plants you find.

3. Make a list of the plants you have in your yard at home.
Title of Book: *Up Above and Down Below*

Author: Irma E. Webber

This book deals with the idea that plants have part of their bodies above and part below the ground. Plants use the sunlight above the ground and water and minerals below the ground to grow. Animals get their food from eating plants or plant-eating animals.

Explain how all animals depend on plants. (You may have to do extra questioning for children to understand the "chain" idea.)

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Title of Book: *Useful Plants and Animals*

Author: Glenn Blough

Animals work for man, give him wool for clothing (wool and leather). Birds eat harmful insects, weed seeds, and small animals such as mice.

Plants provide us with paper products, rubber, materials (cotton and linen) and give us food.

1. How do plants and animals give us clothing? Food?
   - Clothing: wool, cotton, linen
   - Food: meat, vegetables and fruits

2. In what ways are birds helpful?
   - They destroy harmful insects and animals. Others are seed eaters and help control weed growth.
In each part of a large piece of paper, make 4 parts. In each part, you are to have an animal and show what it eats. List the item that animal would have on your menu. There are some animals you would want to have live in your garden. On the back of your invitation list the animals you would send it to and send it to:

ACTIVITIES

1. Make a collage showing useful creatures which live outdoors.

2. If you were a gardener, which creatures would you like to have live in your garden? Why? Design an invitation inviting them to come. Make a list of the creatures who would get one of your invitations.

3. Model from clay a "useful creatures" display. Share your display with your classmates and explain how each one is useful.

4. Describe a "pretend" invitation inviting them to come. Make a list of the creatures who would get one of your invitations.
This book is about the small creatures that are found outdoors. There are pictures and writings about frogs, ants, butterflies, etc. telling how they look, where they live, and what they eat.

1. Although gardeners do not like to have snails in their garden, they are helpful. How? They help clean the garden by eating old leaves.

2. How do worms help plants? They loosen the soil and roots of plants can grow better.

3. How does a sow bug help to clean the garden? They eat old, dead leaves.

4. Why are bees useful? They carry pollen from one flower to another.


6. What do butterflies do to help plants? They carry pollen.

This book describes 25 animals (including humans) and what they eat and how the food is obtained. (For instance, the giraffe eats leaves from trees because his long neck does not bend easily. He must spread his legs wide apart in order to eat.) The book's table of contents lists each animal whose eating habits are described.

1. What are some of the things different animals eat?
   Giraffes: leaves
   Gibbons: fruit, leaves, flowers, insects, eggs
   Elephant: plants
   Lions: other animals
   Earthworms: bits of plants in the soil

2. Which animal has the most appealing menu to you? The least appealing? The child will probably choose the "people" menu or perhaps a plant-eating animal as the most appealing. Some may choose the mosquitoes diet as the least appealing as it is made up of our blood.

3. How are some of the things animals eat helpful to us? Some animals eat harmful insects. Others keep nature in balance.
A tree booklet. Cut out a tree that is the shape of a tree. Glue the ends of the tree to some of the things you learned about trees.

Now cut the cover to trace the shape. Your cover could be made from wood. Cut the cover to the shape of a tree booklet.

1. Draw a picture to show the three stages of a frog's life.

2. If you were a frog and knew how to write, what would you write about yourself? Write a story about a frog.

3. Make a clay model of a frog. Be ready to tell your classmates what you have learned about frogs.
A frog is described: its skin, legs and feet, eyes, ears, size and diet. The changes from egg to tadpole to frog are shown. The book tells how a frog uses its tongue to eat, and how a new skin is acquired, and the winter sleep. (Molt and hibernation are not used). The smallest to largest frogs are shown.

1. What are the stages in a frog’s life?
   
   egg - tadpole - frog. (The children should be able to tell about the shortening of tail and growth of legs in the tadpole stage.)

2. Tell how a tadpole lives. A frog.
   
   Tadpole: In water breathing with gills.
   Frog: on land breathing with lungs.

3. Tell about the smallest frog. The largest.
   
   Smallest: Spring peeper the size of a penny
   Largest: Bullfrog

4. Why do we like to have frogs around?
   
   They eat harmful insects.

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A tree is the world's largest plant being made up of a crown, a trunk and roots. Trees grow from seeds which are scattered in many ways. Sap is carried up to the leaves where food is made to feed the tree. When sap no longer reaches the leaves the green coloring of leaves and other colors appear. Evergreen trees have needle shaped leaves which stay green all year. Trees are helpers as we get many products from them.

1. Name several things that are made from a tree.
   Lumber, paper, cork, rubber, paint, syrup, chocolate, fruits, spices, nuts, camphor.

2. Tell why a tree is a helper.
   A tree is a helper because of all the things we can make or use from it. (see above) Birds and animals make their homes in trees. A tree is a soil saver, etc.

3. Tell about the three parts of a tree.
   Crown: branches and leaves
   Roots
   Trunk: Brings crown and roots together. Trunks are covered with bark

4. How does a tree grow and get its food?
   Water (sap) is taken in by the roots and travels up tubers to the leaves where food is made. The food travels down tubes to feed the tree.
You have just taken a walk through a meadow. You could interview an environmentalist (a scientist who studies the environment). What questions would you ask about a meadow environment and the animals which are there?

ACTIVITIES

1. Where do you think a butterfly goes when it rains? Write a story about it. Draw a picture to go with your story.

2. Draw a picture of yourself in the rain. Let us see how you and your family feel about being in the rain. Write a story about it.

3. Write a poem about rain.
Most animals have someplace to go when it rains: moles to holes, bees to hives, birds can put their head under their wings. A cat goes under the porch, a grasshopper to tall grass, a rabbit into a bush. Some animals don't mind rain - but the author wonders, "Where does a butterfly go when it rains?"

1. Tell where some animals go when it rains.

2. Do you think rain is necessary? Why?

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We are guided through the meadow by a child who is familiar with its animal life. We are shown animal life under the water, on the water, under the ground and in the air. Exploration of a meadow is encouraged.

1. How is a fish adapted to its environment?
   - Breathes with gills, shape of body, fins, etc.

2. How are some animals adapted for living on the water?
   - Ducks: "waterproof" feathers, shape of feet.

3. Describe different birds' beaks and tell how they help the bird get food.
   - Hummingbird: long needle-like beaks for sucking nectar.
   - Flycatchers: small flat.
   - Owls and Hawks: Sharp curved beaks for tearing meat.
   - Seed eaters (fleines): short beaks which are strong enough to break open seeds.