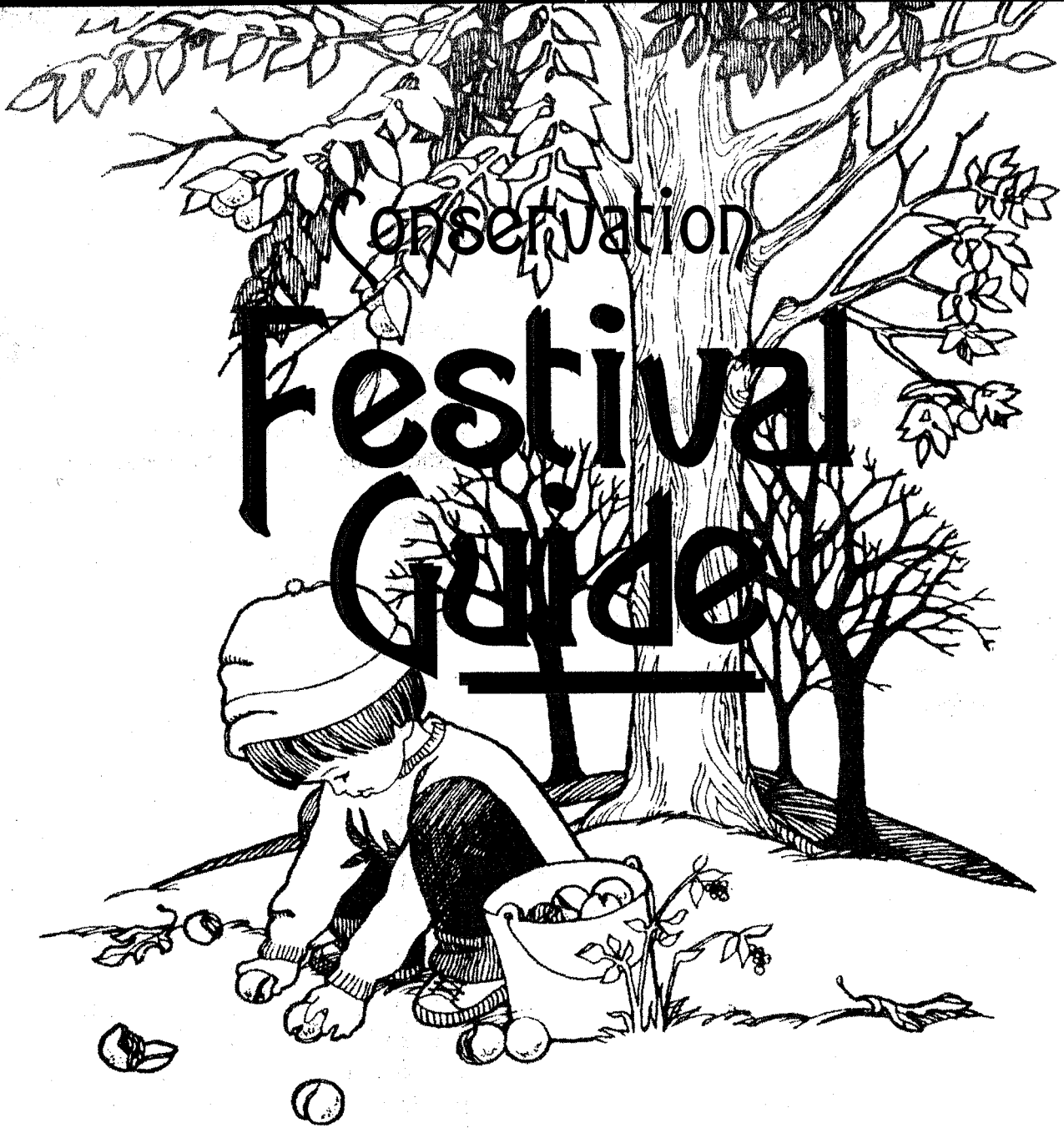




NACD



Conservation  
**Festival  
Guide**

How to host your own Conservation Festival

An easy-to-use Workbook  
for Conservation Education Activities

# NACD Conservation Festival Guidebook

National Association of Conservation Districts

408 East Main Street  
League City, TX 77574-0855  
1-800-825-5547  
fax 281-332-5259  
www.nacdnet.org

This publication was made possible  
through a grant from the  
U.S. Department of Agriculture,  
Natural Resources Conservation Service.

(printed 12/2002)

## Table of Contents

### INTRODUCTION

What is a Conservation Festival? .....	1
What can participants learn about conservation?... ..	1
How you can begin to organize a conservation festival .....	1
How this guidebook can help .....	1

### FESTIVAL LOGISTICS

Your festival theme .....	2
Selecting a festival date .....	2
How long should your festival be? .....	2
Festival Budget and Potential Sponsors .....	2
Volunteers .....	3
Publicity .....	4
Sample Publicity Flyer ..	4
Festival Layout .....	4
Programs .....	5
Sample Timeline .....	6
Thank You Letters .....	6

### THE FUN SIDE OF CONSERVATION

#### EDUCATION (Ideas and Activities)

When the Public Gets There .....	7
Your Audience .....	7
Tactile/Kinesthetic Materials .....	8
Puzzle Pairs .....	8
Quiz Cartons .....	8
Circuit Boards .....	9
Suggested Types of Activities .....	11
Preschool Focus .....	14
Hands-on and Craft Projects .....	15
Equipment Make-and-Takes .....	16
Puppet Play: "The Good Earth" .....	17
Group Activity: "Conservation Jeopardy" .....	21
Group Activity: "Down to Earth Deli" .....	27

RESOURCES .....	30
-----------------	----

# Introduction

## What is a Conservation Festival?

The purpose for this type of event is to offer the local community an opportunity to meet their conservation district staff and experience natural resource conservation in a fun and educational way. Conservation festivals can bring together a mix of activities to introduce children of all ages to the origins of their food and fiber. Festivals can educate the public about conservation practices and the part they play in protecting our soil and water for future generations. A conservation festival can be a month long celebration at the local library with short activities planned each weekend, or a one-day event held at the local community center.

---

**A festival is a celebration  
not school.**

---

## What Can Participants Learn About Conservation at a Festival?

By attending a conservation festival, participants will :

- Discover why soil is precious
- Learn the role that soil plays in the nutrient cycle
- Develop and help others develop proactive conservation behaviors to preserve our natural resources
- Recognize the distinguishing characteristics of soil
- Learn where our food and fiber come from
- Learn about the developmental stages of local flora and fauna
- Learn how to identify and classify grains, fruits and trees
- Learn how to identify and combat erosion
- Learn about water pollution and treatment
- Learn about different kinds of conservation tillage
- Learn about many type of careers related to resource conservation

## Who Can Help Organize A Local Conservation Festival?

You don't need to be a professional event coordinator to be a good conservation festival organizer. There are many people who would volunteer to help you organize and put on a festival. Local educators, businesses, clubs and environmental groups are good places to start, and help is also available from NACD.

## How This Guidebook Can Help?

This guidebook has many ideas to help you as you take on the role of Conservation Festival organizer. Included in this guide are suggestions for volunteer recruitment, budget considerations, educational tips and activity ideas, and an appendix of additional resources.

This guidebook can help you:

- Create a festival timeline
- Create or modify educational activities
- Recruit volunteers to help you



# Festival Logistics

## Your Festival's Theme

You may want to select a special theme for your conservation festival, for example, soil, watersheds, agriculture, wildlife habitat or backyard conservation. NACD has many conservation products to help with this. Phone (281) 332-3402 for available products. Special themes are only necessary when you want to focus on a specific topic for some reason. Generally, a broad 'conservation' theme allows one to touch on local, as well as national, issues that are appealing to all ages.

## Selecting A Festival Date

Just about any season, except winter (unless you are a hardy soul) is a great time for a conservation festival. Mosquitoes might be a problem in some parts of the country during warmer times of the year. But, then, you could decide to hold the festival indoors.

When you schedule your event, try not to schedule your festival on the same weekend as other festivals or major events in your local community. Keeping this in mind will help maximize your turnout.

## How Long Should Your Festival Run?

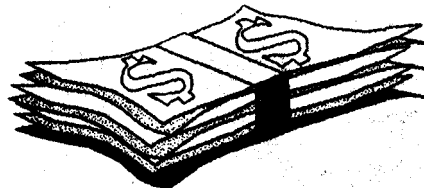
Funding, volunteers, in-kind services, location, age group and festival activities (speakers, etc.) are all strong

factors in deciding how long to make your festival. Depending on available resources, you can hold a half-day event or a week-long celebration.

You don't need to create a huge festival the first time you do this. Don't let nightmares of city-sized festivals with attendance of 20,000 people and costs of providing public toilets, city-wide security and television commercials paralyze you. Start small and work up to bigger and better festivals as you get more comfortable and build a reliable volunteer base. Remember, this is supposed to be fun-for you and the public.

## Festival Budget and Potential Sponsors

You don't need a war chest to put on a Quality event. Probably the biggest expense will be the first year you organize a festival. Durable materials and supplies may need to be purchased but, once attained, need not be replaced for many years. Volunteer refreshments and snacks are an important incentive. And, if you can find sponsorship, boxed lunches for volunteers are especially appreciated.



Prize giveaways need not be expensive or even complicated—stickers, coloring sheets, a stamp on the hand and individually wrapped candies can be appropriate. The size and duration of the festival, the type and number of activities and exhibits offered, visitor attendance, and publicity all impact the cost of putting on a conservation festival. Some of these expenses can be reduced or eliminated by donations of money, materials, and time.

- Some expenses to consider:
- Volunteer appreciation (food/drink, awards/gifts, etc.)
  - Educational materials and supplies
  - Honoraria for speakers
  - Handouts
  - Prizes and giveaways
  - Publicity (signs, posters, news releases, etc.)
  - Venue rental fees
  - Security/traffic control

Sometimes, money can be saved in creative ways. Baby food jars, film canisters, coffee stir sticks, grocery bags (paper and plastic), 2-liter plastic bottles, paper towel tubes, etc., are all very useful items that are easily incorporated into educational make-and-takes.

## Volunteers

Volunteers can make or break your festival. Volunteers support projects because they want to—they can be some of the best ambassadors your

festival can have when interacting with the public! Treat them as professionals! Train them, give them important tasks to do; like helping to design an educational booth and then facilitating it. Have staff also involved in clean up duties. Invite volunteers to planning meetings and seriously consider suggestions offered. Volunteers are important—make them feel that way.

There are many places to go to recruit volunteers outside your existing state/district Earth Team volunteer program. Local churches, 4-H, Scout troops, and staff spouses are all potential volunteer sources. One excellent resource you should be sure not to overlook are teenagers who relate well with younger students. By actively involving teens in your conservation festival you can help them become more confident and learn the value of community service.

Let potential volunteers know they don't need to be experts in soil conservation, wildlife management or education to help put on a festival. People of all ages and backgrounds who have an interest in working with kids are important when trying to promote conservation education.

### Media Coverage/Publicity

If you are looking for ways to increase festival attendance and to improve awareness of your organization in the community, then applying news media and publicity methods will be important.

Local news media are always inter-

ested in community events intended for their readers, listeners or viewers. Your job is to make that information available to the media when they need it and in the form they want it. One of the real advantages of a conservation festival is that it includes excellent photo opportunities for the media. Newspapers and television outlets thrive on a good visual story, so play that up when you contact them.

About one month prior to your event, send the news media an announcement of your event and ask that they include information about the event in their community calendar or in a regular news feature. Include information the public will need to know, such as the nature of the event, where, when, who, what, and is it free. This is especially important if your event is aimed at a broad community audience. If, on the other hand, your event is aimed at four 5<sup>th</sup> grade classes, then direct, personal promotion is all that may be needed.

Another pre-event option is to run an advertisement, if you have the budget for it.

Your primary objective is to get the news media to come to your event and actually do a story on the activity. If you send them a news release ahead of time detailing all that is happening, then they may see little need to attend. So, it is best to send them a news media advisory about one week prior to the event and then follow up with a phone call the day before the event. A one-page media advisory (see sample outline on this page) hits the highlights and gives them enough information to entice them to come.

When the media arrive at your event, have someone available to assist them during their stay. This may include getting interviews or gaining access to certain areas.

On the day of the event, or a day or two later, you can send a more detailed news release and photos to

*Media advisories should include the following information:*

**NEWS ADVISORY**

**Anytown Conservation District**

Attention: News, Assignment and Photo Editors

News Media Coverage Advisory

**Conservation Festival Attracts Area Children**

**Story Summary:** (A 1-3 sentence statement can give the primary reason for the event and what is hoped to be accomplished by the event.)

**When:** (date and time)

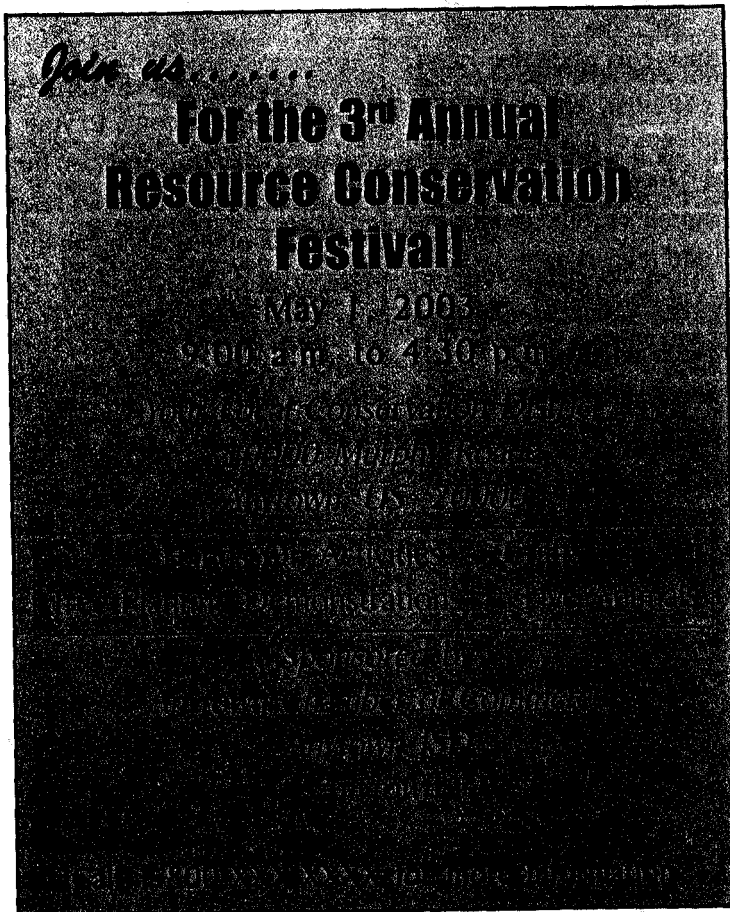
**What:** (list name of event, some activities of interest)

**Who:** (list speakers, key persons, and any other newsmakers)

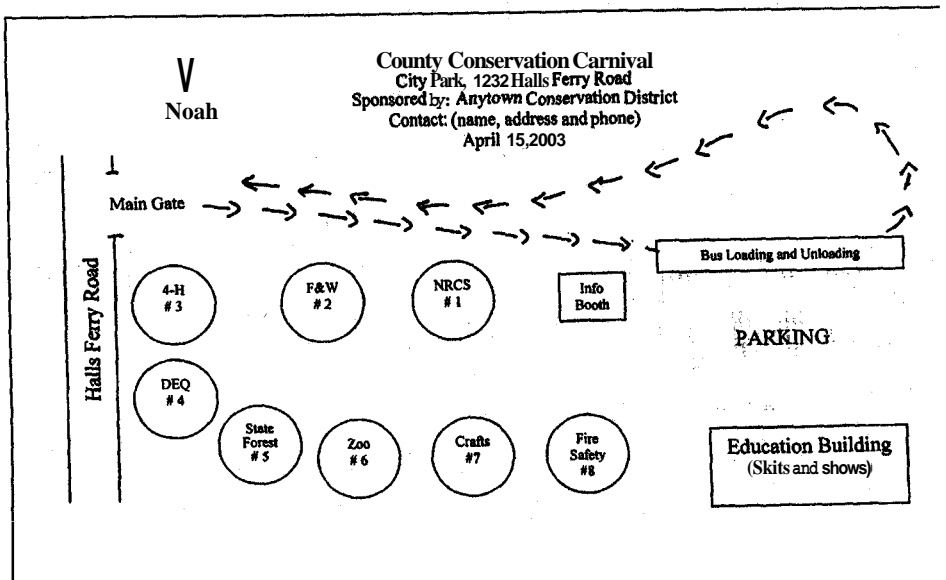
**Where:** (give location with clear details and a number to call for directions, if needed)

**Media Contact:** (list name, phone, cell phone, email, and necessary contact information, such as where to find at the media contact at the event)

## Sample Publicity Flyer



Sample Festival Layout



he media who did not attend. Perhaps they did not have the staff or time to attend but would be willing to do a **story** about the event. Your release should highlight the accomplishments and give some quotes from organizers and participants.

Other publicity methods include producing posters and publicity flyers for distribution throughout the community. The same basic event information should be included on both (see the sample publicity flyer on this page). The flyer can be stuffed in envelopes going out of your office, or you might entice a utility company or other business partner to include them in their mailings.

## Festival Lay-Out

Different types of exhibits, booths or demonstrations require different accommodations. One way to designate booth locations is to create a map of the entire festival location. Mark buildings, restrooms, ponds, forest paths, etc. Use the facility map to consider where to locate that educational demonstration that needs access to electricity or that field tour to the pond or that puppet play (indoors if it's hot). Craft projects are usually easier to facilitate indoors with access to sinks, and away from wind or rain. However, a protected location on the building patio may be just the place to assemble soil profiles to take home. Use your knowledge of your facility and your best judgement. AND, have a back-up plan of alternate

booth locations if your event is rained out. For example, think about what you can eliminate, what booths you can move into the same room, or where you can hold the preschool corner. Sketch out a back-up plan. If you need it, you'll have it.

**Festival Programs**

It's also a good idea to produce some sort of program or "booth visit" card to distribute upon entrance to the festival. This would be a great place to feature cosponsor's logos. This card could also have times and locations of plays and demonstrations, as well as help determine actual attendance. You can easily incorporate an educational tool into this card, requiring each child to get a stamp or sticker from every booth visited in order to receive a prize. An example of how you might format a program card is shown at right.

**2<sup>nd</sup> Annual SWCD Conservation Festival**

*Cosponsored by*  
 (sponsor logo)                      (sponsor logo)                      (sponsor logo)

**Conservation Bingo**                      1:00, 2:00, 3:00, 4:00  
 in the Discovery Center

**Puppet Show**                              10:30, 11:30, 12:30, 1:30 in Classroom B

***Wonderful World of Worms***  
**Question: Why are earthworms beneficial?**  
*(volunteer facilitator would ask this question and then stamp or affix a sticker next to this question on this card)*

***Soil and Dirt Are Not The Same Thing!***  
**Question: What is the difference between soil and dirt?**  
*(volunteer facilitator would ask this question and then stamp or affix a sticker next to this question on this card)*

***Puppet Play: "The Good Earth"***  
**Question: Which is more important: trees or soil?**  
*(Volunteer facilitator would ask this question and then stamp or affix a sticker next to this question on this card)*

***Conservation Jeopardy***  
**Question: Why is conservation important?**  
*(volunteer facilitator would ask this question and then stamp or affix a sticker next to this question on this card)*

***Watershed Bingo***  
**Question: What is a watershed?**  
*(volunteer facilitator would ask this question and then stamp or affix a sticker next to this question on this card)*







# The Fun Side of Conservation Education!

## When the Public Gets There

You know you're at a festival if a friendly armadillo or raindrop greets you at the **entrance!** Costumes for volunteers and staff do much to set the mood, and satisfy your **TV** and newspaper reporters' Quest for a visually appealing story.

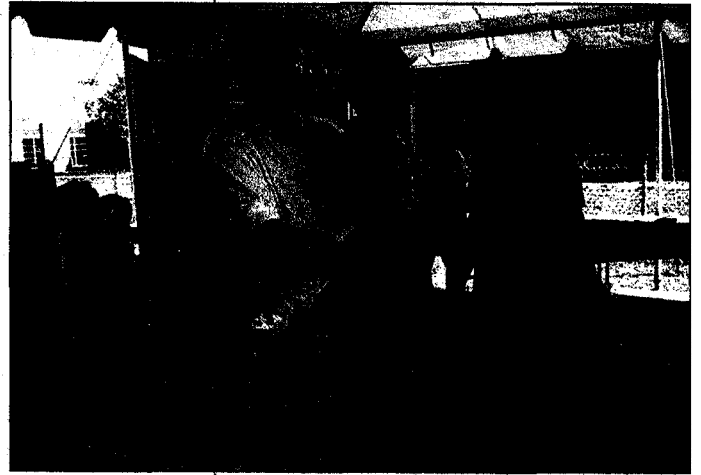
Costumes do not need to be elaborate. For example they can be made from carpet foam that has been cemented together and spray-painted. You can purchase carpet foam from carpet stores, and foam **glue/cement** and paint from craft or home improvement stores. Since cutting carpet foam dulls knives very quickly, have replacement blades on hand. Make sure the **paint you use is safe** and will not dissolve foam, or you'll end up with a sticky mess.

Another way to draw attention to the theme at a conservation festival is to prominently display a large paper mache sculpture of an animal or object. For example, a successful festival once used a large, four-foot Pileated woodpeckers and armadillos fashioned from paper and cloth mache. Be forewarned—store these sculptures in a rodent-free location, or you'll have a wire frame with shredded newspaper for next year's event.



## Your Audience

While it's always a good idea to target a specific audience, some festivals will likely be composed of people of all ages. A wide range of ages and abilities need not cause worry when planning your conservation education activities.



Generally, you can split your activities into two types: those for preschoolers and those for almost everyone else.

Toddlers and preschoolers seem to respond to songs, games, puppets, stories, live animals and action rhymes. Kids this age have very short attention spans and will love to share **stories about their pets**, their new Spider-Man sneakers, or their family vacation during your presentation. Quickly acknowledge such information with a big smile, a "That's wonderful!" and a friendly reminder **that you'll love to hear their story later.** A festival is just that, a celebration—not school. Try to maintain interest by varying your activities just before kids tire of them, stay positive and friendly, and only ask for parents to take and hold their kids when that child is truly disruptive. Have fun and keep going. You will be surprised at what young kids will remember.

Most toddlers have not developed fine motor **skills**, which makes scissors,

beads and glue bottles very frustrating during craft time. **Try** to have all appropriate craft pieces cut out ahead of time, and have glue sticks available. Have volunteers organize and keep supplies in front of the children, taking care to not assemble the craft for the child. Showing a toddler how to use a glue stick is wonderful—helps gluing all the **sequins** and feathers on the project, is not. Don't be concerned if the **sequins** are on the wrong picture. Let toddlers do what they will do... it's less stressful for you and them.

A word on babies: Infants are little learning machines. They take in most of their knowledge of the world through their senses. Set up a large corner with a carpet for parents and their infants. Offer brightly colored rubber animals (frogs), textured fabrics (fake-fur mammals), bumpy naugahyde (reptiles), smooth naugahyde (amphibians, etc.), feathers, **turtle shells**, leaves, and tape-recorded sounds (bird calls, rainsticks) to these little people.

## Tactile/Kinesthetic Materials

For the non-toddling crowd, tactile/kinesthetic materials are an absolutely wonderful way to create interesting and informative activities! Any type of subject can be adapted into hands-on materials in this format. These types of materials could be used at unmanned display booths or education rooms for more focused learning. Make these materials big, bright and fun, so conservation education is made easy. You can also make these materials in "jumbo" size—great for attracting TV and newspaper coverage.

### Following are descriptions and construction guides for three suggested materials: puzzle pairs, Quiz cartons, circuit boards:

**Puzzle Pairs** – Puzzle Pairs make players shuffle the cards, read the Questions and answers, and match the appropriate pairs. The puzzle pairs can be pairs, several cards to be put in order left to right, or top to bottom.

Puzzle Pairs are cards cut apart with zig-zagged edges that fit together. You can also create several cards that fit together in a certain order. Once you design your cards, cut them apart with notched edges. Players shuffle the cards then read the Questions and answers and match the appropriate pairs.

You will need to collect the following items:

- Posterboard
- Markers
- Scissors

- Clear contact paper or access to a laminator

Before you start,

- Decide the concept you want to cover
- Decide on the size and shapes of Puzzle Pairs cards
- Write the questions and answers or facts

1) Special shapes take longer to create, but are more interesting. For example, you could cut out an earthworm, fish or frog from posterboard and later cut it up into matching pieces.

2) Write your question/answer or fact on the front of each piece.

3) Laminate the cards

4) Cut the pieces apart, and store in Plastic baggies.



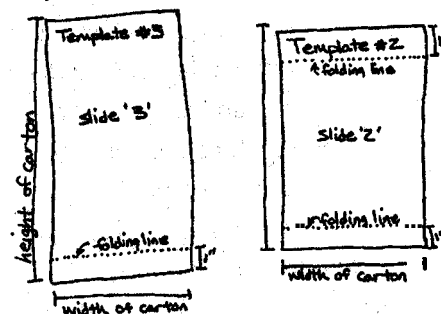
**Quiz Cartons** – A Quiz Carton uses small cards, which players put into a top slot. The correct answer immediately appears at a bottom slot. This is easy to make, simple to use and provides excellent reinforcement.

Quiz Cartons are fun learning tools made out of cardboard milk or juice cartons! You can make these as large as you'd like and can be used with any subject area. Two pieces of laminated posterboard are taped inside the milk carton. They make a slide that flips the card over as it slides in the top

and out the bottom.

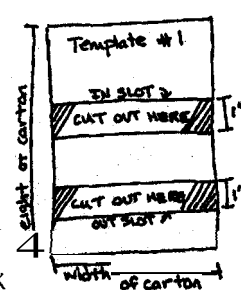
You will need to collect the following items:

- Half-gallon PAPER milk carton (washed)
- Posterboard or new plastic file folders
- Transparent contact paper or access to a laminator
- Masking tape
- Colored contact paper (for decorating the box)
- Craft knife
- Stapler and glue



1) Make the pieces that will be taped to the carton to make the slide. Lay template #2 and #3 on laminated posterboard or new plastic folder cut out pieces, and score on the dotted lines

2) Cut holes in the carton. Lay template #1 on front of the carton and mark areas to be cut. Cut out two holes in the carton carefully using the box cutter or X-acto.



3) Tape the SHORT slide (slide #2) piece into the carton with masking tape.

—Make sure the bottom end of the short piece is folded up and taped to the top edge of the bottom hole.

—Make sure the top end of the short piece is folded down and taped to the bottom edge of the top hole.

4) Tape the LONG slide (slide #3) piece behind the short piece with masking tape.

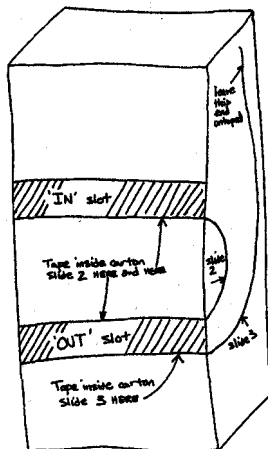
—Make sure the bottom end of the long slide is folded down and taped to the outside bottom edge of the bottom hole.

—Test the slide chute with 1/2 of a 3" x 5" index card.

—Make sure the card slides down easily. If not, raise or lower the top edge of the LONG slide until it does, then tape the top end of the LONG slide near the top of the carton.

5) Close the top of the carton and then reinforce with masking tape.

6) Cover the carton with colored contact paper and draw or glue a picture on the top or front of the carton to show which side is up.



### Quiz Cards for Quiz Carton

- 1) Cut 1.5" x 2.5" index cards from colored construction paper or colored index cards.
- 2) Write the Questions on the front of the cards.

What  
is  
TURBIDITY?

front

TURBIDITY  
is the clouding  
of water with  
sediment.

back

- 3) Cut or notch the upper right corner of each index card. This will help identify the Question side. When the card is inserted into the carton with the notch to the upper right, the card will flip and come out with the notch on the lower right corner of the card along with the answer.

- 4) Write the answers upside-down on the back of each card, remembering to keep the notch on the lower right side of the card.

- 5) Laminate cards

**Circuit Boards** - Circuit Boards match a Question to an answer using a circuit tester. Circuit testers are small, battery-operated pens that can be found at electronic supply stores, such as Radio Shack. Aluminum foil is used to make circuits between Questions and answers. Circuit boards are very interesting and provide immediate feedback to the participant. If correct, a light appears on the tester and on the participant's face! This type of material takes longer to make but is well worth the effort.

You will need to collect the following items:

- Posterboard (11" x 17" minimum), or file folders (durable plastic), or 8.5" x 11" construction paper
- Roll of aluminum Foil
- Masking tape
- Colored masking tape for the edges (optional)
- Transparent contact paper (or access to a laminator)
- Circuit testers (have several on hand)
- Leather punch (so you can punch a hole anywhere you'd like)
- Scissors
- Printed question/answer sheets for Circuit Board (8 1/2" x 11" paper with Q & A printed, drawn or typed on the sheet. You may print directly on the Posterboard if you'd like)

Before you start,

- Decide the learning objective you want to cover
- Decide on the question/answer format (matching columns, fill in the blank, multiple choice, true/false)
- Write the Questions and answers
- Write the directions, to be included at the top of the Q&A sheet

1. Use 11" x 17" posterboard or construction paper so when you fold it in half it will be 8 1/2" x 11". Cut off the tab if you're using plastic folders.
2. Tape or print your Questions and answers on the front of the circuit board. Permanent markers will be good for both paper and plastic.

Don't forget to **make an obvious dot or 'X' where you need to punch holes.**

- Laminate the front of your circuit board. You can skip this step if you are using plastic file folders.

WHERE DO I FIT IN THE FOOD CHAIN?

DIRECTIONS: LABEL THE PLANTS AND ANIMALS BELOW ACCORDING TO WHERE THEY FIT IN THE FOOD CHAIN.

USE NUMBER 1 TO DESIGNATE THE LOWEST MEMBER IN THE FOOD CHAIN AND SEQUENTIAL THEM IN ASCENDING ORDER WITH THE TOP ORGANISM IN THE FOOD CHAIN BEING THE HIGHEST NUMBER.

GRASS PLANT	●	●	1
MARSH HAWK	●	●	2
SMOOTH GREEN SNAKE	●	●	3
RED FOX	●	●	4
CUTWORM	●	●	5

GOOD LUCK!

- Using your leather punch, punch holes where all the dots or 'X's are. Use a piece of wood (like a piece of 2x4) when punching holes.
- Now, carefully match up the Questions and answers from the FRONT of the circuit board to the

WHERE DO I FIT IN THE FOOD CHAIN?

DIRECTIONS: LABEL THE PLANTS AND ANIMALS BELOW ACCORDING TO WHERE THEY FIT IN THE FOOD CHAIN.

USE NUMBER 1 TO DESIGNATE THE LOWEST MEMBER IN THE FOOD CHAIN AND SEQUENTIAL THEM IN ASCENDING ORDER WITH THE TOP ORGANISM IN THE FOOD CHAIN BEING THE HIGHEST NUMBER.

GRASS PLANT	●	●	1
MARSH HAWK	●	●	2
SMOOTH GREEN SNAKE	●	●	3
RED FOX	●	●	4
CUTWORM	●	●	5

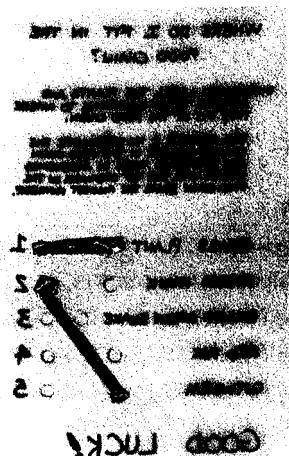
GOOD LUCK!

back. Remember Question columns on the left side of the front of the circuit board will be

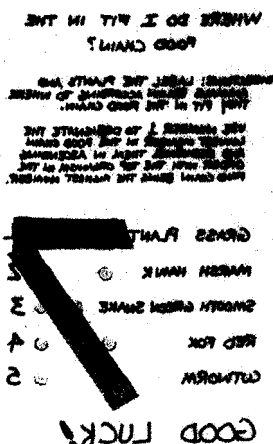
seen to be on the right side of the BACK of the circuit board.

- Use heavy-duty aluminum foil strips on the back of the folder to connect the correct Questions and answers.

## How to make single circuit connections



- Cut off a strip of foil longer than the distance between Q & A holes. Any excess at the ends will be folded up underneath each hole.
- Cut a strip of foil 2" wide and fold it into thirds lengthwise. Make sure you can cover the entire



width of the strip with the masking tape you are using.

- Connect a Question and its answer with a piece of foil. Turn the circuit board over to make sure the foil is showing through the holes. Tape down the ends of the foil with small pieces of tape.

## How to make Multiple Choice and True/False Circuits

Using one piece of really long foil, connect all the answers of one question. Cover all the branches of this circuit with masking tape before you do the same thing with the other Questions.

- Tape down the foil making the circuit to keep it from shorting out other circuits.
- Do the same thing for the rest of the question and answer pairs.
- Now, turn over the circuit board and test all the circuits. If it's done right, the circuit tester will light up.
- Now that all the circuits work, you're ready to staple it together. For strength, add several more sheets of construction paper or posterboard between the front and back before you staple it together. You can cover the staples with colored tape.

Kids will have more fun with funny shapes and bright colors—be creative!

## Suggested Types of Educational Activities

Coming up with festival activities depends on your resources and your imagination. It will be better to have a small, well-staffed festival the first few years than a large, poorly run festival the first year.

Look at the activities in this guide, and think about those that would work best for you. Variety is a key to success. For example, storytellers scheduled between puppet shows throughout the day can provide a good mix of activities. Parents with small children seek out activities to expose their children to, so a corner set up for the little ones would be very welcomed. Older kids like to do and make things. Tours to the pond to sample the aquatic life are sure to draw interest. Have enough equipment to safely allow the most number of kids the opportunity to engage in the activity. A group size of 12 to 15 plus two facilitators is about right. Safety is very important. Two facilitators are needed on hikes and tours—one to stay with the group and one to tend to unexpected emergencies.

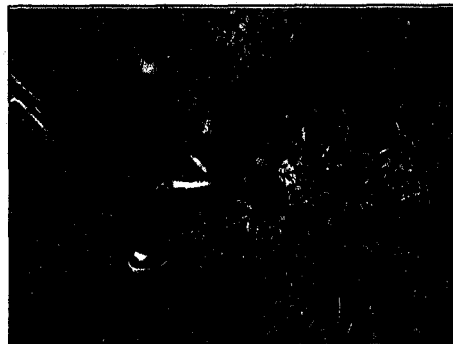
Don't underestimate the learning value of well-designed informative displays. People do read these exhibits and very often will ask for handouts of the information. Demonstrations are also a great way to get across accurate information to observers. Let your creativity and the skills of your volunteer base help you identify possible activities to include in your conservation festival.

**Hands-on Activities.** Your conservation festival should include at least several hands-on activities, such as

arts and crafts, science experiments, and gathering information/advice.

**Participatory Activities.** These types of activities (games,

songs, and field trips) are popular with most everyone. Drama (skits and role playing), poems and songs can entertain an audience while teaching about various conservation issues at the same time.



**Field Tours.** Field exploration is an excellent activity that provides participants with hands-on experience and expands their knowledge and interest in conservation. (A field trip where children participate in hands-on experience is far more valuable than one where they simply see a demonstration or hear a talk) A field trip requires some prior planning. It is advisable to check out the site ahead of time so that you can look for special features or potential problems. Select access routes that accommodate those with strollers or wheelchairs. If it's hot, it is prudent



to have water available at the study point. A tour could feature a walk through a single habitat type to see special features, or through several different habitat types (woods, gardens, orchards, fields, ponds, or streams).

**Exhibits.** Exhibits are a great way for experts and other enthusiasts to show what they've done and to help share important information or ideas with others. Models, collections, photographs, slides, and arts and crafts can be used as the basis for an exhibit. Many local organizations and agencies (agriculture, natural resources, environmental protection and health) have displays on conservation issues or topics that could be an important part of your conservation festival.

**Demonstrations and Guest Speakers.** These are particularly useful teaching techniques for conservation issues. A demonstration is simply showing and telling others how to do something—such as how to plant a tree, pond basics for the beginner, building a terrarium, etc. For a little variety, try mixing individual presentations and team presentations (3-4 presenters). You can invite



resource people to talk or demonstrate specific topics such as watersheds, collecting and sampling techniques, careers in conservation, soil identification, waste management, or bioenergy. Other topics will no doubt come up in the course of planning your conservation festival. The list of possibilities is nearly endless!

There are many activities that can be used as part of a successful conservation festival. The following section features suggestions for educational activities, from which you choose a variety of activities that best fit the format and audience of your conservation festival. While a few of these activities are variations of activities being facilitated at environmental and Earth Day festivals around the country, some of these are new and innovative. None are “fixed in concrete”—you are strongly encouraged to modify and adapt them to suit your particular needs and goals.

**Face Painting.** Kids love to have animals and bugs painted on their face. If you have a staff member or volunteer with some artistic talent and a steady hand, then you can easily adorn children with colorful animals or flowers. Another method for the not-so-artistic face painter is to use rubber stamps with WASHABLE ink. Create very simple line drawings of hummingbirds, flowers, ladybugs, etc., and have them transferred to a rubber stamp at your local printing company. Use **washable** ink (found in hobby stores), stamp the child’s face or arm, and add appropriate color paints to various sections of the art outline. Use non-toxic, water-based paints. Crayola produces paint-by-number colors in small containers. Be creative and dab a little powdery glitter at strategic spots on the painting. (Warning: The metallic glitter can scratch your eyes. Avoid applying near the eyes.) Professional results guaranteed! You might even charge \$1 to cover the cost of paint.

**Insect and Petting Zoos.** There is little doubt that people like to look at live insects and animals. Live animals are always a big hit! Many interesting animals can be collected locally and housed temporarily for display purposes by Qualified handlers. An aquarium full of local aquatic insects is sure to attract attention. How about an animal petting zoo? (Do NOT capture wild animals for a petting zone—disease or injury could result to guests or animals.) Many animals are safe and easy to handle. Rabbits, turtles and lambs are just a few tamer animals that the public can visit. Children and adults will enjoy their chance to get close with some common members of their local habitat!

**Microscopic Bugs.** There are many tiny insects that people have heard about, but never had an opportunity to see, even under magnification. Some of these microscopic insects that are of great importance in agriculture are beneficial or pests. Insects such as thrips, aphids, flour beetles, ants, termites, and booklice make great subjects for viewing through microscopes. You can also put insect eggs, pupae, legs, mouthparts, and antennae under the microscope. For greater durability and ease of use, sandwich these body parts between two slides for viewing under the microscope.

**Backyard Habitat Demonstration and/or Presentation.** You may be lucky enough to already have a butterfly garden on the grounds, and this can be the focal point for a talk on backyard conservation. Even if you don’t have an established garden, you

can still have a presentation on the design, planning and construction of gardens to attract butterflies, hummingbirds; and other animals. NACD also produces backyard conservation materials to support this topic. Call (800)825-5547, x 32.

**Endangered Animals/Plants**

**Display.** Many people are unaware of the plight of our endangered flora and fauna. The conservation festival is one avenue for disseminating this important information through a pictorial display of endangered local plants and/or animals. If your state is home to federal or state-listed rare, threatened, or endangered species (and most are), this display is important. Being informed is the first step, but don't forget to make additional suggestions for ways that festival participants can help our endangered species. An extension of this would be to highlight the return of plant and animal species to the area due to conservation measures.

**What Am I? Quiz.** This activity can be run as a live presentation with verbal clues given to the audience, or as a self-service activity station using a Quiz board or picture and/or clue card with flip-up answer panels. Various plants or animals could be highlighted.

**Whose Shadow Is That?** Poster board cutouts of animal shadows are easy to make and use. This activity will sharpen observation skills and encourage participants to identify various animals or plants by the shape of the body, presence of fins, legs, leaf, etc. This activity could be an interactive event, a display on the building, or these cutouts could be used to mark the pathways from one booth to another.

**What's Inside?** You can construct a few touch boxes to test people's ability to identify animals and animal artifacts by touch. The boxes can be made of wood or a cardboard box and fitted with a sleeve or small door. You can easily construct a small partition fitted with several compartments. Fill each compartment with a different item. Items to use include rubber animals (earthworms, crawfish, frogs), pelts, skulls, nests, etc.

**Wildlife Photofest.** If you ask around you will probably be surprised to find out that there are local gifted nature photographers who would share their photos and knowledge of nature. The photographer could narrate a photofest, presentation, or construct a display so people can come and go as they see fit.

**Learning Center.** The people that attend your conservation festival are thirsty for knowledge of nature. Your event can help them quench this thirst by setting up a resource or learning center where they can browse through books, look at charts and posters, and try out representative conservation education materials. A person with knowledge of local conservation issues would greatly enhance this station.

**How Many Seeds in the Jar?** People love guessing games! Fill a large jar with seeds (sunflower, etc.) and have people estimate the number of seeds in the container. You might even want to have people register their guesses and give a prize for the closest guess.

**Watershed Bingo.** This game is played in the same manner as the

traditional bingo game but the bingo cards feature watershed items rather than numbers and letters. There are many ways to play the watershed version of bingo. All you need are bingo cards, markers or game chips, and a spinner or container with the watershed words. This is another activity where prizes are appropriate (but not necessary).

**Pollution Obstacle Course.** Set up an obstacle course using tires, traffic cones, ropes, and piled hay bales to represent the pollution obstacles like sedimentation, oil runoff, etc. faced by aquatic organisms.

**Concentration Cards.** You will need a set of matched playing cards for this game. You can make your own set. Each player turns over two cards at a time, looking for a match. If the cards match they are removed from the game. Play continues until all the cards have been picked up. For variety the matches can be picture/picture or picture/word. This could be useful at a self-serve, unstaffed station.

**Puzzles.** You can easily construct plenty of challenging word puzzles: word finds, crosswords, scrambled words, cryptograms, mazes, connect-the-dots, and matching exercises. You can create these by hand, or can use computer software to generate these puzzles. Good themes for puzzle making include famous conservationists, beneficial insects, harmful insects, endangered species, wood products, or animal and crop products.

## Preschool Focus

**Preschool Fun Center.** Set aside a special area for preschoolers to explore the natural world with floor puzzles, games, puppets, books, stuffed toy animals, and other appropriate materials. include lots of posters and colorful pictures.

**Craft Table.** Crayons, seeds, pieces of bark, leaves, glue sticks and stickers, can all be used to create simple crafts on various themes. Design a base for the craft, such as the outline of a fish, and provide pre-cut fins for kids to glue to the outline. You can even create a conservation journal in which kids would glue leaves, seeds, bark on appropriate pages for future reference. The educational aspect of this craft makes this a worthwhile activity.



**Animal Search.** This is a great activity for preschool children. You will need a large container (plastic wading pool, sandbox, sand table.) an assortment of rubber animals (frogs, crawfish, fish, or rubber bugs, and a substrate (corn cob, pet litter, biodegradable packing peanuts, etc.) Mix in the rubber animals and substrate and place the mixture in the container. Using their hands let each child search for animals in the substrate for a moment or two. You can either let them keep any animals they find, or

offer them a prize if they find any animals (which they almost certainly will). Return the animals to the substrate and let others take a turn. Variations on this activity could include kids pretending they are raccoons searching in the water for food (frogs, turtles, fish, clams), kids pretending they are armadillos searching under logs for food (earthworms, slugs, ants, beetles), etc.

Have fun with this—kids do!

**Match the Animal in their Habitat.** You will need to create several large habitat pictures (wetland, desert, forest, meadow, etc.) and several appropriate plants or animals. Pull an animal name out of a bowl and have children take turns matching the animal and their habitat.





## Hands-on and Craft Projects

**Rubber stamps.** Children also like to use rubber stamps to create works of art. Many types of animal and plant rubber stamps are available locally. Provide the children with a scene upon which to stamp their animals/plants: a woodland with a stream, a field of flowers, etc. Or you can set up a worksheet with labels, descriptions, or clues where they can stamp a picture of the correct organism. To keep the rubber stamps from 'walking away' it may be necessary to tie them to the table with string or fine metal chain. Similarly, the stamp pads can be attached to the table to make them convenient and accessible to all the young artists.

**Animal stencils.** Children can create their own pictures to color using stencils. Your staff or a volunteer can create stencils of laminated or cardboard stock. These stencils can be used by children to create many wonderful drawings.

**Bark and Leaf Rubbings.** Have 12" logs sawn in half with the bark left on it. Buy inexpensive newsprint paper and cut the large sheets into smaller sheets about 6" x 10". Have large crayons handy and have volunteers show kids how to create a bark rubbing. This is an opportunity to focus attention on trees. You can also facilitate leaf rubbings in the same way.

**Fingerprint and Thumbprint Pictures.** All children can get great results with this art project. All you need is paper, markers, and WASHABLE stamp pads. To make a fingerprint bug you press your thumb (or other finger) onto the stamp pad and

then on the paper. The resulting print can then be changed into a **bug** picture by adding legs and/or antennae with markers. By using different fingers and print patterns it is possible to make flowers, ladybugs, raccoons, fish, snakes and more.

**Sponge Prints.** When sponge painting, use polyfoam sponges and not cellulose sponges. You can use scissors to cut your own animal or plant sponge shapes. For easier use, attach a handle to the back of each sponge (clothes pins or metal binder clips) before using.

**Glitterbirds.** Each child will need a simple hummingbird (or other bird) outline picture and a glue stick. Have the children apply glue to the picture. Sprinkle glitter onto the glue and set the pictures aside to dry. Later, gently shake off the excess glitter (and save it for future use). If desired, the pictures can also be colored.

**Bookmarks.** Most of the children attending your conservation festival are avid readers of nature books. Why not have them create a special bookmark to take home. Cut poster board into narrow strips. The bookmark can be decorated with stickers, crayons, markers, glitter or rubber stamps. Or, you can use clipart to create bookmarks that are ready to color and decorate.

**Balloon Animals.** Perhaps you know of a local clown or other person talented in making those neat animal shapes from balloons. Or have an adventurous volunteer check out a book from the library and learn how to make balloon animals. It is possible to make ladybugs, flowers, grasshoppers

and many, many other animals out of balloons. Eyes and other body markings can be applied with blunt acetone-free markers.

**Masks and Headbands.** The kids can make and decorate their own masks or headbands. If you have the masks and headbands reproduced on card stock or poster board, they will be much more durable. You will need scissors, chalk, crayons, markers, feathers, and other craft materials. You will also need a stapler for headbands and string or elastic to complete the masks. If you offer chalk to color the masks or headbands, make sure to have any pre-drawn designs on the rougher side of the poster board. Few things (except markers) will easily mark the smooth, shiny side of poster board. Some ideas for masks could include raindrops, flowers, insects (ants are great), birds (owls are especially impressive) and mammals (don't get stuck making only raccoon masks!). Headband ideas could include earthworms, and leafy tree 'crowns'.

**Popsicle Stick Puzzles.** Children can make their very own animal or plant puzzle using Popsicle sticks, tongue depressors, or paint stirrers (for a really big puzzle). Give each child four to eight sticks (depending on the size of the sticks). Lay the stick on a table, side by side and place a piece of making tape across all of the sticks. Turn the sticks over and using crayons or markers, draw a picture of a mammal/reptile/fish/insect/bird on the untaped side. When the picture is complete, remove the tape. Mix up the sticks and the puzzle is ready to put together again.

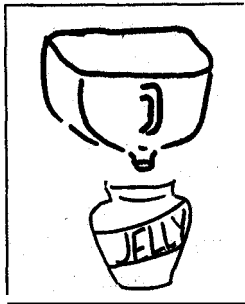
**Equipment Make-And-Takes**

**Berlese Funnel** – Berlese Funnels are a great way to determine the animal life found in topsoil. You will need to collect the following materials:

- Desk lamp with flexible neck
- Empty, clean milk jug
- Empty jelly jar
- A stick about 25cm long
- Scissors
- Masking Tape
- ¼" mesh hardware cloth or window screen (15cm X 15cm)
- Rubbing alcohol (ethyl alcohol)

Cut the bottom off of the milk jug and turn it upside down on the

jelly jar to make a funnel. Pour some alcohol into the jelly jar to preserve any organisms that fall in.

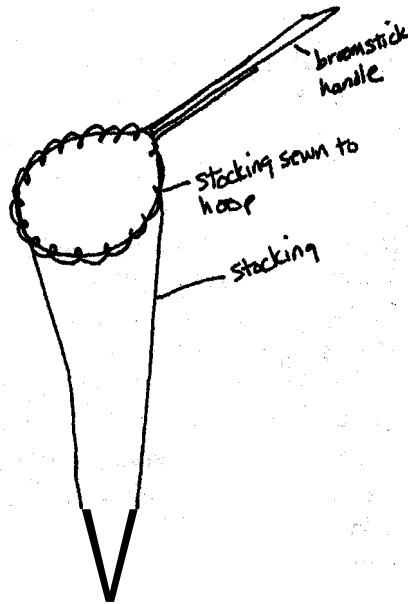


Tape the stick to the handle of the milk jug and the outside of the jelly jar. Put the screen down inside the funnel. Add topsoil to the funnel, and set up the desk lamp with the light bulb a few inches from the surface of the soil. The heat from the light bulb will drive soil organisms down into the base for collection and later study.

**Plankton Net** – Plankton nets are useful tools for collecting organisms that live in the water. You will need to collect the following materials:

- nylon stocking
- metal coat hanger
- thread and needle
- an eye dropper or turkey baster

Straighten the hanger to form a hoop about 6" wide. Stretch the stocking over the hoop, and sew it firmly to the coat hanger hoop. Twist the rest of the coat hanger into a handle. You can use this handle as it is, or attach it to a broomstick. To collect plankton, drag the net through the water and dump any organisms into a jar of pond water. Use the eyedropper to take samples for study under a microscope.

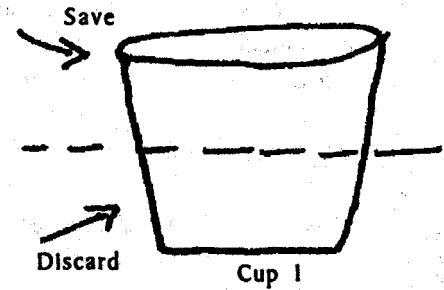


**Observation Cups** – Observation cups are useful tools that are very easy to construct. You will need to collect the following materials:

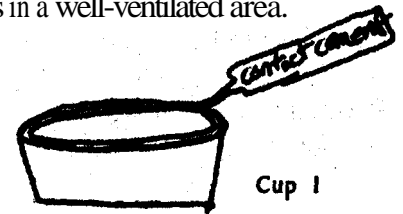
- 8 oz. Disposable Plastic cups
- You need 2 cups to make 1 observation cup (Make sure to buy the flexible plastic cups that can be cut with scissors. Harder disposable plastic cups will only break and splinter if you try to cut them.)

- Tubes of contact cement, fast drying
- Fine netting or cheese cloth
- Scissors

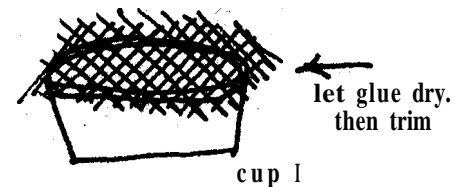
To make an observation cup, cut the bottom off one cup, about halfway through the middle of the cup. This is the 'lid'.



Apply a thin ring of contact cement on the lip of the 'lid'. Be sure to do this in a well-ventilated area.

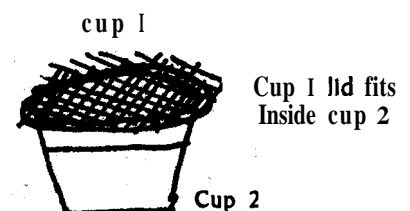


Apply a piece of netting or cheese-cloth to the ring of glue, and let dry.



The fabric will allow air to enter the observation chamber, while preventing captives from escaping.

Stack the 'lid' inside an uncut cup to form a simple observation chamber.



# The Good Earth

## A Puppet Play

Written by: Mark Bersche. Naturalist.  
Houston Arboretum & Nature Center,  
Houston, Texas

**Characters:**

Oak  
Squirrel  
Armadillo  
Soil

*(The scene opens on a tree, arrogantly extolling his own virtues to an enraptured squirrel.)*

OAK: What a sight! What a sight I am.

SQUIRREL: Yes. What a sight you are mighty Oak.

OAK: I am glorious in my splendor.

SQUIRREL: Oh glorious, glorious mighty Oak.

OAK: And gracious. Do I not provide food and homes to thousands of living creatures. *Noblese oblige* and all that.

SQUIRREL: You feed and shelter us all mighty Oak. Your acorns are beyond compare. Your strong limbs support and protect us.

OAK: Indeed. I am truly stupendous.

*(A voice comes ti-om backstage. It is the soil beneath their feet.)*

SOIL: Truly stupid you mean.

*(The oak is outraged.)*

OAK: What! How dare you insult me you little flea-ridden bit of mange.

SQUIRREL: No mighty Oak! I would never insult your holy acorness.

OAK: Then who dared to insult me, the most incredible of living things. There is no one else here you fool.

SQUIRREL: It was a voice from nowhere oh great provider. It was almost as if it came from beneath our feet.

SOIL: It did come from beneath your feet, you silly nut muncher. Stand aside.

*(The squirrel hops out of the way with ayelp and a block of sod rises into view)*

OAK: ~~Is~~ it you who dared to interrupt our admiration of me, the mighty Oak, provider of all that ~~is~~ good and necessary in the forest?

SOIL: Yeeh. That was me.

SQUIRREL: How dare you insult the great Oak! You must not know who you are talking to. Without him there would be no forest.

SOIL: Oh please! You've been brain-washed by this arrogant piece of wood. It is plain that I am much more important.

*(The squirrel laughs uproariously.)*

SQUIRREL: You must be mad! You're just dirt. The great Oak gives us everything.

OAK: Yes. It is true. I am the great provider. The foundation of the forest. I can see that it would be easy to be jealous of me, my little dirt clod friend, but you must not try to elevate yourself above your station. You see, as a tree, I not only provide food and shelter to squirrels but also to birds, raccoons, possums, millions of insects. I even give oxygen for all creatures to breath. So you see, my little mud pie, you cannot compete with me.

SOIL: You sure are proud of yourself aren't you?

OAK: What is not to be proud of. ~~As~~ long as I am around, the forest lives. All the creatures worship and adore me because I provide what they need. I am the forest. ~~So~~ you see, you smudgy tittle bit of ground. I am important whereas you are not. I am useful whereas you are useless.

SOIL: Useless am I!

OAK: Very useless.

SOIL: Unimportant am I?

OAK: Exceedingly so.

SOIL: It's obvious that you don't know who you're talking to. I am the next step for both of you guys, because when you die the creatures who live here in me will break your silly bodies down into useful nutrients which will help feed the next generation of

trees. In just the part of me that you see here, there is a recycling crew of hundreds of worms, insects, and other creatures working away to turn guys like you into me. I, the soil, am a mixture of living creatures, bits of my parent rock, and nutrients that you cannot live without.

In fact, I am where you go when you die. *(smugly)* Therefore, I am your heaven and therefore better and more important than both of you put together.

**SQUIRREL:** You're dirt, you're dirt. Just plain old nasty dirt and you've insulted the mighty oak.

**SOIL:** Nasty am I! Just for that you can take your grubby little nuts back.

*(Soil spits nuts at squirrel.)*

Find somewhere else to bury them.

**OAK:** My gracious you are a rude little patch of ground aren't you. You lower classes have no class. Why don't you just duck back down beneath us where you belong and stop meddling in things that you do not understand.

**SOIL:** Oh you would like that wouldn't you. I go back down carrying you guys, keeping you alive while you stand around bragging about how great you are. Then when you croak or drop your leaves, you still expect me to take it all in. I'm tired of listening to it I tell you! I'm going to teach all of you a lesson.

**SQUIRREL:** What are you going to do?

**SOIL:** I'm packing up and leaving. I'm taking my recycling and decomposing crews, my humus, with all its nutrients

and minerals, and I'm out of here. Elvis has left the building.

*(Soil exits.)*

**OAK:** That impertinent upstart. I for one am glad he's gone. We will be much better off without him. My roots are firmly sunk into the gritty deep layers of the earth. I don't need that noisy living layer of soil at all. Let us return to what we were doing before that nasty fellow showed up. *Go* ahead, admire me.

*The curtain closes as the tree primps and the squirrel oohs and aaahs.*

*The curtain opens to reveal a backdrop of withered plants and leafless trees. The Oak and the squirrel hold a dismal counsel.*

**SQUIRREL:** Oh great and mighty oak, I'm hungry. Can you please put on some acorns.

**OAK:** Do you think I have not been trying? I just don't have the energy. My roots are working just as good as they ever did, but somehow I am missing something I need. Perhaps I should take some vitamins.

**SQUIRREL:** Can you at least put out some more leaves so I can make a better nest? Every time it rains, I get wet.

**OAK:** How odd. Every time it rains, I never have time to get a good drink because the water runs away so fast. When that annoying soil was around, with all its spongy humus, the rain soaked down nice and slow and stayed around for a while. Now, one quick sip and it's gone.

**SQUIRREL:** Oh great and wondrous

**Oak, I hate** to say this, but you are **definitely slipping** in the area of being the provider of what we need here in the forest. In fact, you are looking so sickly, I'm beginning to wonder if there is even going to be a forest much longer.

*(An armadillo wonders along)*

**ARMADILLO:** Hi squirrel.

**SQUIRREL:** Hi Armi. How are you?

**ARMADILLO:** *(surly)* I'm hungry, that's how I am.

**OAK:** Uhh humm! You seem to have forgotten something armadillo. Aren't you going to greet me? In these difficult times we must not let our good etiquette slip. But I forgive you your rudeness, just go ahead and praise my virtues now and we will forget your oversight.

**ARMADILLO:** Oh I would praise you if I had the energy, you old chunk of wood, but you see, when the soil left he took all the tasty decomposers and recyclers that I eat with him. So I don't feel much like complimenting you when you're the one who insulted the soil, you silly old lumber pile.

**OAK:** How dare you speak to me in this manner! I am the forest! Bow before me and cringe before I unleash my wrath on you.

**SQUIRREL:** Oh, now you've done it Armi. You've insulted the mighty Oak! Apologize, apologize! We need him to provide for us!

**ARMADILLO:** Oh I'm not scared of him, his bark is worse than his bite. Heh, heh, heh.

**OAK:** How dare you mock me, you insignificant little possum on the half shell. I will withhold my services!

**SQUIRREL:** Ohh, now you've done it Armi! We're doomed!

**ARMADILLO** Oh get a grip Squirrel. Haven't you noticed that ever since the soil left, this tree can't do any of things he has been claiming credit for, for years? I think this tree is a fake. It's the soil who is really the backbone of the forest.

**OAK:** This smacks of rebellion! Treason! Treason in the forest.

*(The soil returns.)*

**SOIL** It's not treason, it's just good sense if you ask me.

**OAK:** DOyH! He's back! Curses on you soil!

**ARMADILLO** Don't you curse my meal ticket. Mind if I nibble that worm there?

*(Armi makes a snack of a worm.)*

**SOIL** Go ahead, the worms will nibble on of you sooner or latter. And don't you worry either squirrel, now that I'm back this silly old oak and all the other plants will be able to grow healthily again.

**SQUIRREL:** Oh thank you Soil, thou short but mighty one. You have saved us all.

**OAK:** Squirrel! You forget yourself! I am the provider of all you need.

**SQUIRREL:** That is true mighty Oak, but it seems that the soil is your provider, and so it must be even greater than you, and the true lord of the forest.

**OAK:** This is madness!

**ARMI:** Boy, there's nothing as pathetic as a jealous tree.

**OAK:** That is enough! You all think you are so smart that you don't need me ayy! Well we'll just see about that. Hear me all my plant brethren. We have been insulted, our importance has been questioned. Let us leave this place and leave these miserable creatures to their fate. Eat dirt you ungrateful consumers.

*(The Oak leaves.)*

**SOIL:** This could be a problem.

**ARMADILLO.** Good riddance I say. Now that the soil is here, we don't need any old plants. Lots of living things eat the creatures in the soil just like I do. Were set.

**SQUIRREL:** But what about me? I need plants. In fact, a whole lot of things need plants.

**SOIL** That's true. As much as I liked teasing that old tree, I have to admit that I would just be lifeless old dirt without the decaying bodies of plants and animals mixed in with the broken up bits of my parent rock. I just hope that, ... wait a minute, what was that?

*(The sound of a rising wind is heard.)*

**SQUIRREL** I think it is just the wind coming up.

**SOIL:** Oh no!

**ARMI:** What's wrong soil, you're not scared of a little wind are you?

**SOIL:** I am when I don't have some plants to hold me together!

*(The wind blows harder and the soil starts to be swept away)*

**SOIL** Ahhh! I'm eroding, blown away on the wind.

**ARMI:** Don't leave yet, I haven't eaten.

*(A distant sound of thunder is heard.)*

**SOIL:** What was that?

**SQUIRREL** I think it's just a storm coming up.

*(It starts to rain.)*

**SOIL** Yaaa! I'm melting! I'm melting!

**SQUIRREL** Oh great Soil, you can't erode away. We've already lost the tree. If you're gone, there will never be a chance for the plants to come back.

**SOIL** I can't help it. Without the tree and the other plants, I just fall apart whenever the wind and rain come along.

*(The rain stops.)*

**ARMADILLO:** Thank goodness it's stopped. You're kind of worn down some soil, but it won't get any worse.

**SOIL** It doesn't matter. I'm doomed. Without plants I can't replenish myself. I will slowly erode away down to bare, lifeless dirt and rock.

*(The tree returns.)*

**OAK:** Ahh ha! So you admit that you need me after all.

**SQUIRREL** Oh great and mighty one, you have returned.

**OAK:** Yes I have decided to have mercy on all of you and come back.

I guess everyone knows now how important I am.

**SOIL:** I'm leaving again if you're going to start bragging.

**SQUIRREL:** Oh great, towering Oak and mighty, underlying Soil, all of your arguing about who is the most important is making us hungry. Can't you both just admit that you need each other as much as we animals need both of you?

**SOIL/OAK:** Well,.....

**ARMI:** Oh come on you guys, admit it. The trees and other plants need the soil to get their nutrients and moisture from. And soil needs plants to protect them from erosion and to replenish them with good decomposing plant parts.

**SOIL:** I have to admit I'm doomed without plants to feed and protect me.

**OAK:** And, for my part, I will say that the soil gives me good nutrients and a spongy source of water.

**SQUIRREL** Oh happy days! How lucky we are to have two such glorious providers, the Oak and the Soil, a most wondrous partnership which keeps us all well fed.

**ARMADILLO:** How sickening. I think I'm going to ralph.

*The End*

Enjoy!  
Mark Bersche  
Houston Arboretum and Nature Center  
4500 Woodway Drive  
Houston, TX  
(713) 681-8433

## Conservation Jeopardy

Adapted by Sandy Greene from "Natural Resources jeopardy" by Dawn Shank in *Watershed Connections, VA Assn. Of Soil & Water Conservation Districts, 1998*

**Time Frame:** 50 minutes, depending on commercials

**Ideal Target Students:** 4<sup>th</sup>-8<sup>th</sup> grade

**Ideal #:** 20-40 students (1 or 2 classrooms)

Can be used for larger groups, but not everyone plays, and Questions can be customized for any audience, even civic groups.

### Materials:

- ◆ Jeopardy-type game show wall hanging. (I use a 6x8 blue plastic tarpaulin, with clear 8.5" x 11" sleeve protectors applied in rows with colored duck tape. The categories and pollutants-eliminated columns are more permanent printed pages, in colored card stock. The Questions (and answers on reverse) are white, then all covered by a consistent color of cardstock with a giant mark printed on the top. Some of the Questions also have "daily double", or extra bonus points as secondary frames, once the cardstock is pulled to reveal the Question.  
The tarp can be hung from the ceiling on bungees with hooks, or duck taped to a block wall.
- ◆ Noisemaker signal for each team. (A rattle and a bell work fine. and a third noisemaker for the host to signal that it is **OK** to get help from team members.
- ◆ Watershed Profile Board for each team. It is good to have collapsible easels to put these on



- ◆ Colored foam squares with velcro attached to the watershed boards as bar graphs of pollutants: Oil - black, Sediment - orange, Fertilizer- green, acid- pink, Animal waste - brown, Pesticides - yellow.  
You should adjust the categories and the profiles to suit your own watershed problems. As long as the total number of squares is the same on each board (about 70 is good), the teams can compete equally with radically different profiles.
- ◆ "Commercial" props - I use *Cooking Up Trouble*, but other pertinent environmental demonstrations, like *Enviroscape* make good, informative commercials. Humor is a good thing, along with facts, so I usually add a costume hat.
- ◆ Costumes for jeopardy host, **Alex Treebark** - an old sports coat and fish tie are fine.  
Watershed hosts, Vanna and

Hanna or Hans (ideally the kids' teachers) - I use different colored feather boas, or shiny fabric scarves, if a man, then a tux vest. All these characters need big nametags.

- ◆ Signs for the "Television Studio", announcing the show, a "Boo" and "Clap" sign, potentially signs for consolation prizes, like "the largest acorn found in the county this fall," or the first summer breeze, or winter snowflake."
- ◆ "Watery" fabric to cover a small desk or table in the center

### Set Up:

Arrive early enough to have the room set up, host costume on and signs on the door before kids come in, if possible. Hang the tarp in the middle of the long wall, with easels and watershed boards on either side of it, and a small table with cloth in front for the host, the bell and the rattle.

Arrange the chairs in two teams with an aisle in the center to get to the table. Long rows are best, so that everyone is close enough to read the Questions and answers.

### Directions:

As kids come in, be expressive and silly, greeting them like a television host. Inquire about their long travel, airsickness, good hotel food, etc., and direct them to their "studio seats". Ask their teacher or others to be Vanna and Hanna, and, you're ready to roll.

Tell the kids that you're sure they know how to play, since they have ostensibly watched Conservation jeopardy on TV. Introduce Vanna and Hanna, and the watersheds with great fanfare. Use the "Clap" cue card for the good stuff, and "Boo" for the pollutants. You may impart a little background, but not much, as you and Vanna point out the pollutant profile. At the end of the introduction, say, "But this team can clean up their watershed, right?", and hold up the "Clap" cue card.

Tell the students that each person in the studio will have a chance to play, starting with \_\_\_\_\_ (point or tap to the kids), and going this way down the row. (demonstrate). Show them the rattle and bell for their teams, which they can't touch until they have read the question, and also the other noisemaker (I use a squeaky tomato toy) as the signal to get help from your team. Remind them that the contestant will have to go back into their team area to keep the other person from hearing the answers yelled out. (You will use this a lot.. it's the way they will all learn about the topics, You can even have another device as host, that Vanna or Hanna may be consulted. I still use some wait time before squeezing the tomato, though. Then they really want to know the answer!) Point out the categories, and show how to take off pollutants from the watershed boards, so Vanna will know.

Invite the first contestants up. Pretend to talk to them about their watershed, etc. in a microphone.

(Ham it up, and they will usually play along.

Let the team with the farthest away watershed choose the first category (or any other factor, like most animal waste!). Try to remember which team is the category chooser, but the kids will help you if you forget.

Pull the card out and read the "answer" to the whole group, ready to recognize whoever rings or rattles first. Send the winner to the board to eliminate some pollutants while the next contestants come up. Feel free to give funny or neat natural consolation prizes (I only do this verbally).

When they are really into it, say that there will be a commercial after the next Question. Put on your other costume, and change the pace for a few minutes with some related conservation in a humorous form (like Cooking Up Trouble – non-point source pollution, with a chef hat), then return to the game.



## Cooking Up Trouble Commercial

Note: Local example, you might want to write your own.

How about a cooking demonstration?

(Put on chef's hat and apron)

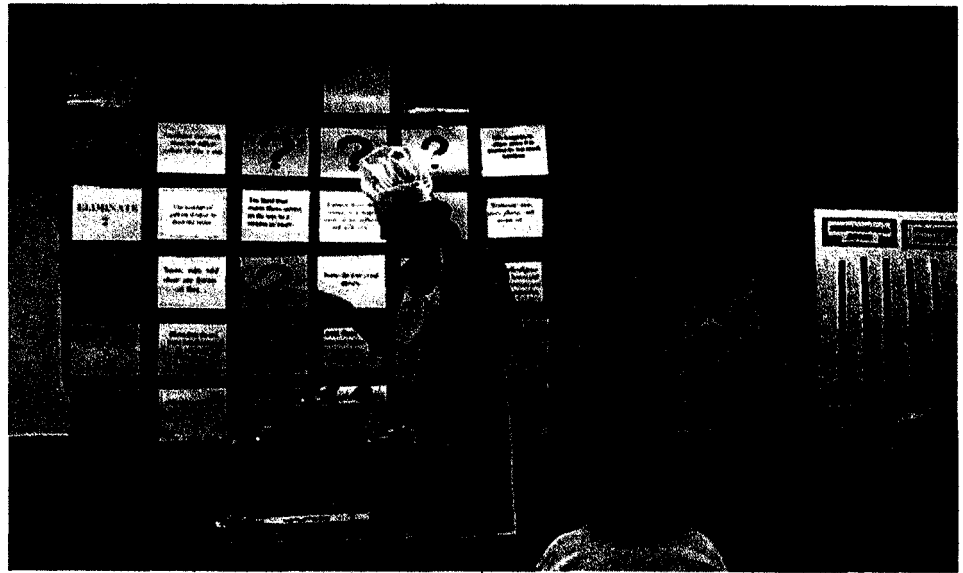
My best recipe is "Cooking Up Trouble," and I have all my ingredients right here:

First, I start with the mixing cup of Augusta county water. You know, we have wonderful water in Augusta County... I bet you've seen some of the springs and streams we have when you go on a hike. Nice and clean. You can even jump right over some of the tiny streams, because we're right at the beginning of two big watersheds: the James and the Shenandoah-Potomac. The headwaters of these watersheds start right here in Augusta County, just as clean as they can be.

But, before the streams leave Augusta County, at least 13 of them have gotten so many pollutants in them that we have to do a lot of work to clean them. Now I have two Questions:

Number 1 - What pollutants could possibly get into our clean water? And Number 2 - Who could possibly put them there? Do you think it's somebody from over in West Virginia who comes over at night and puts pollution in our streams? (Laughter) Or maybe some factories in Chicago or Mississippi?

Well, as much as we might like to think that, it's probably not someone else. It's got to be us! But it's not any one of us in particular. We can't point a finger at someone and say, "Stop



that!" It's sort of all of us, and we call this kind of pollution "Non-point source", because you can't point a finger at it.

Now what kinds of pollutants do you think could get in our water? (Wait, or rummage around in your ingredients... it's OK if kids get a hint from looking at your labels). Usually the first suggestion is "Litter". You're right, of course. Litter can be just about anything, either dropped by accident in the water, or left lying on the ground in the watershed. Whenever it rains, anything on the land tends to wash down into the streams and rivers, including litter. Here's an old gum wrapper. Let's put that in to represent all kinds of litter, from aluminum cans to old mattresses and cars. (Give the kids a minute to tell about the litter they have seen, and maybe add, "Yeah, people used to think that rivers were a good place to get rid of trash, but we know better now!")

Wait a few seconds for someone to suggest another pollutant, and, if no one can think of anything, pick up an

ingredient. Be careful not to accuse or indict anyone in particular, but be positive and upbeat about all the better possibilities we know about.

Oil products - (Use bulb syringe to squirt some of the water from the charcoal container... there is a little vegetable oil in the top) I bet you've been to the mall when it's raining, and seen those beautiful rainbows on top of the puddles... where do you suppose that oil goes if it keeps on raining? You're right, into the stream. This could be oil, or gasoline, or brake fluid, lots of oil products.

Soil - (Sprinkle some soil in and whisk it up) How could soil be a pollutant? It's a natural substance! But whenever we take off the grass and trees from a field or construction site or road, a lot of soil washes away - enough soil to make the streams look like soup. How would you like to be a fish in one of those streams - trying to pump this water through your gills? Yuck. That's why we have good laws to get people to plant grass right away when they are building something.

There are two other problems with **soil pollution in water**. One is that we need to keep our soil right where it is, not down in the Chesapeake Bay. It takes 100 years to make an inch of topsoil, but only one good rainstorm to wash it away. The other problem is that soil in the water blocks the sunlight from growing the submerged Aquatic Vegetation – the good plants that grow in and around the streams and rivers, which help to put oxygen in the water.

Manure and Poultry Litter (Sniff and sprinkle). I bet you've seen some of the nicest cows walk down to the stream for a drink, and stay there to poop! Cows are pretty hard to potty train! And then they have to drink poop water too! We love our cows, but we don't want them to poop in our water. We also want to let the bushes and trees grow around the streams to keep them clean, and cows do a pretty good job of stomping or eating them too. So we've gotten smarter about fencing our cows out of the streams, and piping the clean water into a trough for them. We know that manure and poultry litter are good fertilizers for growing crops too, but we have to be really careful about how much we put on, and when, so that it doesn't get rained into the streams.

How about people poop? Out here in the country, we have septic systems, where bacteria can take care of whatever we flush. Then the clean water can percolate through the sand and gravel. But only if our septic tanks are working right, and get cleaned out every couple of years. In our towns we have sewage treatment plants, where they have lots of good bacteria and oxygen stirrers. We have to take extra good care of them to be sure that the water coming out of

them is clean before it gets into the river too. We know that we have a few septic problems here in the county, so let's put a squirt of leaky septic field too (same container as oil products).

**Fertilizer – (Sprinkle in and whisk)**  
There must be some kind of contest to see who can put the most fertilizer on their lawns. Have you seen those giant piles of fertilizer at the store in the spring? It's a trick, I think, to keep you all mowing all summer! We all know that grass just can't use all the fertilizer we put on. So what happens to all that extra fertilizer? Yup, it becomes part of our non-point source pollution recipe.

Wait, what's this? Salt? How could salt get in our rivers? How about in the winter when the roads are icy, and we need to put salt on them to stay safe. We have to be really careful not to spread salt right by the creeks, though.

Anything else? What about this acid rain bottle? Where does acid rain come from? It's another one of those non-point problems too. When we all drive our cars, the exhaust goes up into the atmosphere and contributes to acid rain. And, when we turn on all of our electric appliances, we are asking the power plant for more electricity. Guess how most of our electricity is made... burning coal. It's just like saying "Hey, could you put another shovel of coal in the power plant for me?!" We can get the electricity we want, but we also get the coal smoke we don't want... because it causes air pollution and acid rain. It makes me be sure to turn off the light and TV when I leave a room!

Oh yeah, we have some pesticides and herbicides in here. Remember that lawn fertilizer? Often, people put

in some weed killers (herbicides) at the same time as the fertilizer, and call it "Weed and Feed". I don't know why everyone hates dandelions so much! But if it comes to a choice of clean water with dandelions or polluted water without dandelions, I bet we'd learn to get along with them! There are lots of ways to trick some of our bug pests besides spraying all of them, and we're getting smart about that too.

Now, we have really cooked up a mess, haven't we? We really can find and measure these pollution ingredients in Augusta County water too, and we need to find ways to clean them up. Wouldn't it be great if we could keep these pollutants from running off into the streams in the first place? If you wanted to invent a way to catch them before they go to the stream, how would you do it?

(Give kids a chance to give their ideas, and praise the merit in all of them)

You know, Nature already has a really good system that can take care of most of these pollutants, if we let it – it's trees and shrubs, growing all along our streams, like a filter or a buffer! Just to prove a point, I brought along one with me (not as good as a natural one, but we can get the idea).

(Take out the box lid with the sponge and tell the kids that the sponge represents the roots of the trees and other vegetation, and the box lid is the watershed. The school or their houses would be on the box top above the buffer.)

Now let's give this buffer a change to clean up some of our recipe. (Pour about 1/4 cup down the box lid, and let it pool in the sponge). Suspense is good. In fact it illustrates the prin-

ciple we're after with a buffer! Whistle the Jeopardy theme song while you wait. When the water finally does begin to trickle through, begin to ask the kids what might have happened in a real buffer to those ingredients. The **soil** and fertilizers and manures are easy. The oil products and pesticides may be sequestered in the trees or broken down by soil bacteria. The litter can be picked up by kids on Earth Day, or will gradually decompose. And the clean water is gradually released into the healthy, cool stream, even in a drought.

Take off your chef's hat and apron, and thank the kids for making it so much fun to talk about science and good conservation. Dispose of your 'recipe' into a waste container for later cleanup, as kids worry about pouring it down the drain. I usually dump it on trees at the edge of the parking lot before I leave.

**Signs for Cooking Up Trouble:**

- Sign 1: Benefits of Riparian Forest Buffers
- Sign 2: **FOOD:** Leaves and twigs fall into the water, providing food for creatures that are critical to the aquatic food chain. The riparian edge is rich with food for birds.
- Sign 3: **ECONOMIC:** Reduces costs of storm water retention, site preparation and landscaping
- Sign 4: **WILDLIFE HABITAT:** Provides diverse cover, feeding and breeding sites for fish and a corridor and abundant edge for wildlife.
- Sign 5: **SHADE:** Tree canopies shade and cool the water below, aiding oxygen retention for stream life. They also filter airborne dust and pollutants.

Sign 6: **NUTRIENT UPTAKE: Roots** absorb fertilizers and other land-borne pollutants, which are then stored within the plant.

Sign 7: **FLOOD PROTECTION:** Forest cover helps to absorb and buffer flood waters thereby diminishing stream bank damage.

Sign 8: **FILTRATION:** Forested buffers can remove **95%** of sediment, **80%** of nitrogen, and **78%** of phosphorous from runoff.

**Back to Conservation Jeopardy**—

Notice the time...you will need to finish up in some way, with a big great, Vanna and Hanna going for all that's left, or something. Be sure to thank the helpers, and make a final point about how it really is possible to Eliminate Those Pollutants from your Watershed!

**Notes:**

It's good to stop every now and again and review the boards, asking the group what their clean-up strategy is, or what they really want to eliminate. Sneak in some science about actual best management practices that would accomplish their goal.

If one watershed gets way behind, you can give them a "matching grant", like double the points for the next three Questions they get right. It's good to keep a team from psychological disaster in any creative way. I tell them that it often happens that the government can step in to help out with difficult problems.

Get a few kids to stay behind to help put the Question marks back in the

sleeves and the pollutants back on the watershed boards, so you can be ready to do it again, or pack up smoothly and leave.

This works great for ecology clubs, two rival 4<sup>th</sup> grades, scouts, etc. Ask the teacher beforehand if s(he) would like specific Questions included. I keep several folders of extra Questions for customizing.

Have fun!  
Sandy Greene  
Headwaters SWCD  
PO Box 70  
Verona, VA 24482  
540-248-4328 (ext 3)

**Signs for Conservation Jeopardy Game**

Each sign is on a separate poster board.

- Sign 1 : Conservation Jeopardy
- Sign 2: with Alex Treebark
- Sign 3: Vanna
- Sign 4: Hanna
- Sign 5: Hans
- Sign 5: Live Audience!
- Sign 6: Vanna (make this very large point font for name tag)
- Sign 7: Hanna (make this very large point font for name tag)
- Sign 8: Hans (make this very large point font for name tag)
- Sign 9: Boo!
- Sign 10: Clap

## CONSERVATION JEOPARDY

Adapted from  
*Watershed Connections*, 1998, Dawn  
Shank

### WATER SOIL AIR WILDLIFE POLLUTION SOLUTIONS

#### **Eliminate 1 Pollutant**

American use more than 300 billion  
gallons of this a day.

(What is water?)

It takes 100 to 1,000 years to make  
one inch of this.

(What is soil?)

The gaseous envelope that surrounds  
the earth.

(What is the atmosphere?)

An animal that lives by capturing other  
animals for food.

(What is a predator?)

Wise use of our natural resources.

(What is conservation?)

#### **Eliminate 2 Pollutants**

Inside the home, an average of 50  
gallons of water is used for these.

(What is a shower?)

The land that water flows across or  
under on its way to a stream, river or  
lake.

(What is a watershed?)

Exhaust from this source is a major  
cause of air pollution.

(What are motor vehicles?)

The place where a plant or animal  
naturally lives and grows.

(What is a habitat?)

Planting one of these is like a natural  
air-conditioner, helping to clean and  
cool the air.

(What is a tree?)

#### **Eliminate 3 Pollutants**

Snow, sleet and rain are forms of this.

(What is precipitation?)

Nearing down or washing away of soil  
by the action of wind, water or ice.

(What is erosion?)

4 dumb thing other people do that  
can damage your lungs.

(What is smoking?)

Some traveling fish, birds and butter-  
flies do this.

(What is migrate?)

Aluminum, glass, plastic and motor  
oil.

(What can be recycled?)

#### **Eliminate 4 Pollutants**

These two rivers have headwaters in  
Augusta County.

(What are the James and  
Shenandoah?)

Bits of runoff soil that form the  
number one pollutant of Virginia's  
rivers.

(What is sediment?)

Acid rain is caused when this is  
burned to make electricity.

(What is coal?)

When an animal or plant is in danger  
of becoming extinct, it becomes one  
of these.

(What is an endangered species?)  
Start a pile of grass clippings, leaves  
and vegetable waste, and you'll be  
doing this.

(What is composting?)

#### **Eliminate 5 Pollutants.**

Water is made up of these two  
elements.

(What are hydrogen and oxygen?)

Air, water, minerals and this make up  
soil (what is organic material?) Even  
though there is a lot of this element in  
air, it takes lightning or special plants to  
make it available as a nutrient.

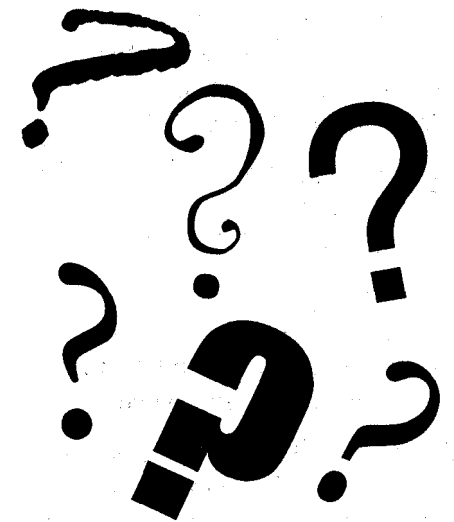
(What is nitrogen?)

These areas of low drainage (swamps  
and marshes) are good for water  
Quality and wildlife habitat.

(What are wetlands?)

A protective zone of trees and  
vegetation allowed to grow along  
stream banks to filter pollutants.

(What is a riparian buffer zone?)



## Down-to-Earth Deli

Written by Sandy Greene

**Time Frame:** 20 minutes

**Objectives:** Through a menu of delicatessen items,

1. Students will observe the variety of textures, colors and structures of local soils.
2. Students will be exposed to the origin and history of limestone and other soils in the Valley
3. Students will observe loam being made of silt, sand and clay, and through the metaphor of milkshake, hear the history of our prime agricultural soil.
4. Students will observe a simulated core of soil, showing the horizons, as placed in a parfait glass. Special point: topsoil is thin.

### Materials:

- **Soil Sampler** (used to display, and as ingredients for other menu items.)
- Deli tray with sections of sand, clay, topsoil, compost, parent rock material, food service props and serving utensils, signs, menu, delicatessen uniform hat and/or shirt
- **Subterranean Sub**
- Thin slices of parent rock, a sub roll, a squeeze dispenser labeled "sediment sauce"

#### **Loam Shake**

Milk shake container for shaking.

#### **Horizon Parfait**

Parfait glass, shaving cream marked ("whipped cream") cherry (or monopoly hotel), straws

### Procedure:

Put on costume, set up "deli counter" with signs and dishes. Welcome students to the Down-To-Earth Deli. Ask them if they're hungry for a little snack while they decide what to order, and show them the Soils Sampler. You may use bits of beautiful rock, and present this on the best deli tray with lid you can salvage. Advertise 3-4 items with a brief introduction: "This is the finest organic material available, pure aged compost." "This is clay with iron in it that will really stick to your ribs, and the seat of your pants. The particles in it are so fine, they're microscopic." "Perhaps you'd like some of this prime limestone. You won't believe how it was made... it's a really old recipe."

"Millions of years ago, right where you're sitting, was ocean. Of course there weren't any people around then, just ocean. This salty sea was shallow and warm, and there was a lot of coral and little seashell animals living in it. And dying in it, too. Every time a mollusk would die, its shell would sink down to the bottom of the ocean. Over thousands of years, a big thick layer of seashells lined the bottom. All those shells were made of calcium carbonate. As they piled up and got heavier and heavier, and scrunched up together, they turned into rock - limestone rock to be specific. Some of this limestone is really pure  $CaCO_3$ , or chalk. Some of it still has fossil mollusk shells in it. (show one). Limestone can be different colors, and textures, but it has the same chemical properties as the ingredients it came from long ago.

Still no takers? (As students decline, act surprised and sad.) "These are Virginia's finest soils and rocks; I can't understand why you care for them. (aside) Seriously, even though we don't actually eat dirt, except when we're little in the sand box, without soil, we wouldn't have anything to eat but algae and fish. And we would have much to wear either since cotton and leather are both products of soil. I guess we wouldn't have many houses. without bricks or trees.

**(back in character)** "Well, maybe I can tempt you with our menu. How about a sub sandwich? (Open the sub roll and pick up some rock slabs with tongs.) I'll just start with a layer of limestone, but we can add **lots** of other sandwich stuffers. I'll bet you want to know where they came from too. Well, I'll tell you!

You know, after the oceans were already really old, some of the continents were shifting around and bumping into each other. In fact, they're still moving by tiny little baby steps we can hardly even measure. But back then, when a continent bumped into us, it caused the limestone to fold and stack up into mountains. There were even cracks like miniature volcanoes that let ash fly up into the air. When it fell, it made other layers in the valley which became rock. Now that there were mountains, the rain that fell on them ran downhill, taking with it little bits of limestone, ash, and minerals like iron. Each raindrop was like a hydrogen bomb, crashing onto the rock mountains, causing erosion. Now guess where the water went? To the lowest

part of the valley. and from there to the new seashore where the bay or ocean was, at sea level. Does that sound like a watershed to you? You got it!

All those particles of rock rolling downhill with the rain came in different sizes. Big particles of any kind of rock were still rock-like, with rough, sharp edges. We call that sand. Sand was pretty heavy, and it dropped out in the river soonest. The next smaller particles, or silt, got carried on a little farther and got deposited. But the tiniest particles of all stayed in the water a long time. They are the clay particles, too small to see. When they get deposited, they bind together very tightly like glue. They make great mud, and really good pottery. Wherever the river dropped the particles they formed layers. Some of those layers on the bottom got squished together tightly enough to form new rock, like shale.

Let's add some shale to our subterranean sandwich. Yummy! Now let's add some sandstone, and a little siltstone. You can even see the layers within layers.. ..looks like bacon! How about a little sediment sauce of particles over everything just to keep our sub fresh and moist?

I'll bet you're getting thirsty after that subterranean sandwich. How about a shake? Not just any shake, but a loam shake.

Now all those particles got brought down by the rivers of the Shenandoah Valley and mixed together into the most perfect combination for growing crops. Here's the secret recipe for

perfect prime agricultural soils like we have: 1 scoop of sand, 1 scoop of clay, and 2 scoops of silt. The combination of sand, silt and clay is called loam. The sand allows excess water to drain, and clay helps to hold enough moisture next to the roots. The silt has just the right lightness and space between particles for the roots to grow wild. The basic limestone and other parent rocks have great minerals in them that plants just love to soak up through the roots. No wonder Shenandoah Valley was called the breadbasket of the south! Augusta and Rockingham Counties and still #1 and #2 for many crops and most types of livestock.

Now how about dessert?

I'll make you something really special, since you're such good customers.

How about a soil horizon parfait? Let me just get a parfait glass and start off with the first horizon –the parent rock material. Will limestone be OK? It's so sweet! Now the next horizon might be a layer of limestone gravel, broken up from the parent materials. Let's have a layer of sand, and then a deep horizon of subsoil, which just happens to be really full of clay. Whoa, our parfait is almost full, and we have 2 more horizons to add.

The most important one of all, just like the chocolate layer, is the topsoil horizon. Topsoil is the loam we just made, so we'll pour it right out of the loam shake maker. This parfait is just like the Shenandoah Valley soils. Our precious topsoil isn't very deep. In some places it has gotten so thin, you can see the subsoil right on top. It's the topsoil we try so hard to conserve and keep from eroding farther down the watershed.

Now, we'll add a very thin horizon of organic materials. This compost will do nicely, since it's just leaves and vegetables that have decomposed, but we could add some dairy manure or poultry litter for nitrogen fertilizer. Let me see if I have any.. .oh, yes, here's some right here. It is in my spices! Now we have the parent materials, the subsoil horizon, the topsoil (most important) horizon, and a thin little organic horizon.

All we need is some whipped cream and a cherry. Aaahhh, it **looks** good enough to eat! Or at least live on top of. (Add a straw) Here's our well, going through all the horizons and into the parent materials, and (add another straw) our septic field.. .Hmm, better put this downhill from the well.

Well, the Health Department might come to inspect, so I'd better get the Down-To-Earth deli cleaned up. I hope you come back often for some soil specials. So long!

(It works to pair this up with "The Earth As An apple" Demo, or to show pictures of real-life conservation measures on local farms.)

**Signs to Make for the Down-to-Earth Deli**

- Sign 1: The Down-To-Earth Delicatessen
- Sign 2: Opening Today ... The Down-to-Earth Delicatessen
- Sign 3: Your waitress will set you in a millennium.  
(It takes a long time to make ingredients this good!)
- Sign 4: Special of the Century!
- Sign 5: **Clay**
- Sign 6: Silt
- Sign 7: Sand
- Sign 8: Loam
- Sign 9: Humus
- Sign 10: Organic Material
- Sign 11: Compost
- Sign 12: Limestone
- Sign 13: Chalk
- Sign 14: Seashell Fossils
- Sign 15: Sediment Sauce
- Sign 16: Subterranean Sub
- Sign 17: Loam Shake Maker
- Sign 18: Deli Delight Whipped Cream
- Sign 19: Recipe for Soil: Minerals  
Air Water Humus  
(Dead Organic Stuff)