



Post - Activity Guide

POST SOUND TO SEA ACTIVITY MANUAL

We are so glad that you and your students had the opportunity to come learn with us at the Sound to Sea Environmental Education Program. During classes, our instructors enjoyed sharing new vocabulary, concepts and ideas with your students. We hope that these new ideas and concepts will act as sparks for each student, illuminating subjects that they will want to pursue. Our hope is that you will encourage your students to keep exploring these issues once they return to the classroom. We hope that you will help us kindle these sparks of interest into a fire by making their Sound to Sea experience part of your classroom back at home. To that end, we have compiled some activities, lessons and information that we hope will make this an easy process for you. Included in this packet are classroom-friendly, hands-on lesson plans for each of the habitats your students explored. We are also including several resources we think you may find useful, including a list of green books for kids, environmental web sites, and some books for teachers to help you continue to feed the fire of knowledge.

We know that the pressures of implementing the North Carolina State Science Curriculum, testing, and paperwork can make it difficult during your science class to expand upon the wonderful learning your students began at Sound to Sea. We would like to suggest that you can incorporate Sound to Sea into lessons in other academic areas as well! Here are some ideas:

SOUND TO SEA LETTER WRITING

We wanted to emphasize one of our favorite post-Sound to Sea activities by placing it on the title page of this manual. We love mail! The Sound to Sea instructors enjoy hearing from their past students. Communication skills are important in every part and stage of life. We would be honored to give your students the special opportunity to practice the art of the written word. Correspondence for individual staff members may be sent care of Trinity Center Sound to Sea Environmental Education Program, PO Box 380, Salter Path, NC 28575.

RESOURCES FOR THE CLASSROOM

With the emphasis that is put on reading and writing, we find it more and more important to find books that capture student's interest. We have compiled a list of books dealing with science and the environment as well as some web sites that may interest your students. Also included is a list of books that the Sound to Sea instructors find helpful with their lessons. We hope you will also find them useful.

GLOBE PROGRAM

GLOBE stands for Global Learning and Observations to Benefit the Environment, and is a hands-on international environmental science and education program. The goals of the GLOBE program are 1) to enhance the environmental awareness of people throughout the world, 2) to contribute to the scientific understanding of the earth, and 3) to help all students reach higher levels of achievement in science and mathematics.

While your students were here, they may have done some water quality testing in Bogue Sound designed to fulfill the first of these goals. We hope that your students by doing these tests have learned more about the importance of protecting our fragile North Carolina waters. But we hope that this contact with our program will just be the beginning of their learning.

After your group left, we took all the information that your students gathered in Bogue Sound, and entered it into the GLOBE website. From there, it goes to a central data processing facility, and is then added to the growing body of information collected all over the world by students. This global information is helping scientists to study concepts of global change. Global change has always been a hard thing to study because it is hard to get enough information to come to scientific conclusions. So, the work your students did here at Sound to Sea is helping us meet the second goal of the GLOBE Program – their work is contributing to the scientific understanding of the earth!

The last goal of the GLOBE Program is one you will have to help us realize. Once you get back to school, look at the GLOBE website, and you will be able to receive vivid images composed of your students data and data from other GLOBE schools all around the world, acquire information from a variety of sources, and collaborate with scientists and other GLOBE students and communities worldwide in using these data for education and research!!

Included later in this packet is information on how to get on the website and obtain the results of the water quality tests you may have done at Sound to Sea as part of the GLOBE Program. We hope you will use this information as a jumping off point to learn more about the opportunities available to your students within the GLOBE program. Just using their website will give your students an opportunity to expand their computer, math, geography and science skills.

EARTH DAY EVERYDAY!

Finally, we have included a list of ways you can continue teaching about environmental issues in your classroom. Whether you decide to use these ideas as spring boards for new lesson plans, teach by example using these techniques, or simply give your students a copy of this page, we would like you to make Earth Day every day.

Here are some lesson plans we have used in our outdoor education program from each of the habitats. All of them can be adapted to the classroom, as well as to your students' learning level. They have come from many sources including Project Wet and Project Wild. To obtain your own copy of these manuals you can contact a local university for workshop availability. We hope that you find this helpful in your quest to keep the sparks of interest we have ignited burning in your students. Have fun!

SALT MARSH AND SOUND HABITATS: CREATE AN INVERTEBRATE (Grades 3-6)

Objectives: By the end of this lesson the students will be able to:

- Recognize the characteristics of invertebrates
- State the environmental conditions that are typical of the salt marsh
- Demonstrate an understanding of animal adaptations
- Encourage and develop creative thinking

Materials: paper, crayons or colored pencils

Procedure:

1. Each student will need a piece of paper and crayons. Explain to them that they will be responsible for designing a new species of invertebrate that will live in the salt marsh and will eat the Marsh Cord Grass (*Spartina*) stems. You may have to review with the students what this hardy marsh plant is.

The new invertebrate must be able to survive the changing conditions of the marsh:

- Occasional high winds and waves
- Rapidly changing salinity, temperature, and water availability due to the rising and falling of the tides
- High quantity of nutrients brought by the streams and rivers to the sea
- Little available oxygen due to bacterial action on the bits of dead material that float into the marsh
- Little shade or shelter
- Temperatures that can get very hot

2. As you design your creature, address the questions listed below. Keep in mind that for each structure you give the organism, there should be some function for that structure.

- How does the organism obtain food?
- How is locomotion achieved?
- How does this organism cope with predators that may want to eat it?
- How many young are produced?
- What type of development do they have?
- Does this organism have any interesting behaviors?

Be creative! This organism should not resemble any known creature. Finish by giving it a scientific name.

SALT MARSH AND SOUND HABITATS: WETLAND METAPHORS (FROM WILD AQUATIC)

(Grades 6-9)

Objectives: By the end of this lesson the students will be able to:

- Describe the characteristics of wetlands
- Demonstrate their understanding of the importance of wetlands to wildlife and humans.

Materials:

Wetland metaphors box: sponge, coffee filter, antacid container, mixer, cereal box, strainer, soap, picture of pillow or bed, and picture of cradle.

Procedure:

1. Begin by reviewing the concept of a wetland—what is it? What are our local wetland habitats? Discuss pond and salt marsh as different types of wetlands. If time permits, discuss the importance of wetlands by focusing on some of the major functions they provide. For example, you can discuss how wetlands absorb runoff, retain moisture, remove toxins, provide protection, etc.
2. Divide students into groups of two or three and distribute objects accordingly. Tell the students that each object represents what a wetland is or does. You may want to discuss the concept of a metaphor—what is it? (Metaphors create a relationship between concepts by comparing an unknown idea to a known concept). Give the students a minute to discuss with their partners the relationship between their object and a wetland. Ask each group to report their ideas to the class.
 - SPONGE—absorbs excess water caused by runoff; retain moisture even after standing water dries up.
 - PILLOW or BED—resting place for migratory birds. Also provides breeding grounds and wintering habitats.
 - MIXER or EGG BEATER—mixes nutrients and oxygen into the water.
 - CRADLE—provides a nursery that shelters, protects, and feeds young wildlife.
 - STRAINER—strains silt, debris, etc. from water.
 - FILTER—filters smaller impurities from water.
 - ANTACID—neutralizes toxic substances.
 - CEREAL—provides nutrient rich foods.
 - SOAP—helps cleanse the environment

Following discussion and review of the functions represented by each metaphor, ask students to summarize the major roles that wetlands perform as a habitat. How are wetlands important for humans? Discuss the fragility of local wetlands. If time permits, discuss local issues concerning wetlands and the destruction of wetlands. How do humans pollute wetlands? Why do people convert wetlands to other uses? Strengthen the students' understanding of the connection humans have to wetlands. Recreation, aesthetics, utilitarian uses, environmental quality and nature study are a few of the connections we have with wetlands.

**BEACH HABITAT:
CREATIVE TAXONOMY
(Grades 3-6)**

Objectives: By the end of this lesson students will be able to:

- Define Taxonomy and how it relates to groups.
- List the seven different taxonomic groups.

Materials: Pencils, paper, shells from their trip to Sound to Sea,

Procedure:

1. Review with students what taxonomy is. At Sound to Sea they learned that taxonomy is the study of classification or putting things into groups. They should also remember the seven taxonomic groups. Help remind them of the “pass word”: Kids Prefer Candy Over Fried Green Spinach. Then translate the first letter of each word to the taxonomic group (Kingdom, Phylum, Class, Order, Family, Genus, Species)
2. Give students a box of shells. Or, in groups of 3 or 4, have the students pool their shells from their trip and use them for the activity. Ask them to create their own classification system. Have them group all the similar shells together. Continue making groups depending upon different characteristics.
3. Concluding discussion: Take a few minutes to let kids explain their reasoning. Then explain how scientists classify all living things, including these mollusks. Taxonomic decisions were made by people just like them, looking at the physical characteristics of each living thing. They just made the same kinds of decisions made so long ago by the first “scientists.” You can bring in guide books of shells and see how close their grouping was to the actual classification of mollusks.
4. You can continue this discussion to include human adaptations. Ask the students how we have adapted to our environment. You may want to address the way that humans usually adapt our environment to fit our needs rather than adapting ourselves to the environment.

**BEACH HABITAT:
CLASSIFY YOUR KEEPSAKES
(Grades 6-9)**

Objectives: By the end of this lesson, the students will be able to:

- Understand the basic format of a dichotomous key.
- Read and devise a dichotomous key.

Materials: Pencils, paper, shells from their trip to Sound to Sea, field guides

Procedure:

1. Review the types of mollusks with your students. They are gastropods, bivalves, etc.
2. Explain to students that field guides are a necessity for identifying organisms. Dichotomous keys using yes/no questions are effective and easy to use. They can include sketches of organisms or be non-graphic. Learning how to create a dichotomous key can help students improve their recall of specific organisms and they can gain an appreciation of how field guides are started. By creating a dichotomous key students learn how to ask questions that will enable them to

identify organisms more efficiently. The complexity of this class can be increased or decreased by the students' or teacher's choice of organisms (e.g. an all plant key would require more in-depth knowledge of plant structure than a mixed animal/plant key.) Thus, this class can be adapted to many levels.

3. Create an example with the class: Create a key using some of the shells the teacher has brought to identify, such as these mollusks:

Surf Clam
Great Atlantic Cockle
Olive Shell
Northern Quahog
Snake Eye
Common Auger

In order to create the key one must write down similarities and differences between the shells:

Surf Clam: Bivalve, Smooth Shell

Great Atlantic Cockle: Bivalve, Vertical Ridges on Shell

Olive Shell: Gastropod, Opening Lengthwise, Long/Tubular

Northern Quahog: Bivalve, Horizontal Ridges on Shell, Purple Streaks Inside

Moon Snail: Gastropod, Snail-Like

Common Auger: Gastropod, Long/Tubular, Opening at One End

1. Is it a bivalve, i.e. two parts?

Yes - go to 3

No - go to 2

2. Is it long and tubular?

Yes - go to 5

No - go to 4

3. Does it have a Smooth Shell?

Yes - Surf Clam

No - go to 6

4. Is it snail-like?

Yes - Moon Snail

5. Is it tapered with opening at one end?

Yes - Common Auger

No - go to 8

6. Does it have deep vertical ridges?

Yes - Great Atlantic Cockle

No - go to 7

7. Does it have horizontal ridges and purple streaks on the inside?

Yes - Northern Quahog

8. Is this shell smooth with lengthwise opening?

Yes - Olive Shell

Individual Activity:

After creating a key such as this one with the entire class have the students use their own shells to create a key, and have them use guide books to identify their shells.

FOREST HABITAT: FOOD/ WATER/ SHELTER

(Grades 3-6) (OH DEER!! -Project Wild)

Objectives: By the end of this lesson, the students will be able to:

- Identify and describe food, water, and shelter as essential components of a habitat.
- Understand the importance of a proper habitat for animals.
- Define limiting factors and give examples.
- Recognize that some fluctuations in some wildlife populations are natural.

Materials:

Large Field (or a cleared area of the classroom), large piece of paper or white board, marker

Procedure:

1. Begin by telling students that they are about to participate in an activity that emphasizes the most essential things that an animal needs to survive, food, water, and shelter. Ask students to count off by 4s and go to 4 separate areas. Mark two parallel lines on the ground 20 yards apart. Have $\frac{1}{4}$ of the group (all the #1s) line up behind one line (the Raccoon Line), and the other $\frac{3}{4}$ of the group behind the other line (the Habitat Line).
2. The #1s are raccoons who live in the forest. We assume here that the raccoons have enough space to live, but need the other three components. When a raccoon is looking for food, it should clamp its hands over its stomach. When it needs water, the hands are over the mouth, and for shelter, the arms should make a point over their head. Students who are raccoons choose what they need individually (not as a group). Students may choose any of the three, but may not change their minds once they have decided what they need.
3. The rest of the students are Food, Water, and Shelter. As a group, these students huddle up and choose what they'll be at the start of the round. They use the same signals. The game starts with the players lined up on their respective lines with their backs toward each other.
4. The teacher begins the first round by reminding students not to change their signs and asking all students to make their signs on the count of 3. The instructor counts to 3 and on 3, the students turn and face each other. The raccoons, upon seeing someone with the same sign as he or she, runs and grabs that person (a raccoon may only get one component per round), and takes the students back to the Raccoon Line. Any raccoon that did not find a match is dead and joins the Habitat Line as food (decomposition). Do this for approx. 15 rounds. During play the teacher should be graphing the gain or loss of the raccoon population, so that the graph may be discussed with the students at the end of the game.
5. Conclude by asking various questions. What do animals need to survive? Are wildlife populations static or do they fluctuate? Why or why not? Is nature ever really in balance or is nature in a constant process of change?

Background:

A variety of factors affect the ability of wildlife to effectively reproduce and maintain their populations over time. Disease, predators, weather changes,

accidents, pollution, destruction and degradation are among these factors.

Some limiting factors serve to prevent wildlife populations from reproducing in numbers greater than the habitat can support. In excess, however, this can lead to endangerment and/or extinction.

This activity is designed for students to learn that a good habitat is the key to wildlife survival, that a population will continue to increase until a limiting factor is imposed, and that nature is never in balance, but is constantly changing.

FOREST HABITAT: IT'S MY WRITE!

(Grades 6-9 Adapted from Nature's Classroom Lesson Plan Book)

Objectives: By the end of this lesson, students will be able to:

Create a non-graded piece of personal writing

Describe the natural habitat

Write a collaborative poem

Listen to the descriptive words of nature authors as well as each other.

Overview: Writing assignments in school are often given in schools with strict guidelines or even as forms of punishment. Unfortunately, many students see writing as a task and often write in fear of the grade the teacher will give. This lesson allows students to write for themselves, to describe a natural setting, and even to appreciate each other as true authors.

Materials:

Pens, Pencils, Markers, Crayons, Lined paper, Blank paper, Construction paper, Index cards, etc., Clipboards, or hard notebook to write on, Readings from nature authors
An outdoor area: This can be on the school grounds, and hopefully includes a tree or two. It is imperative that students are allowed to choose their own tools for writing! This will allow them to feel in charge of their own writing as well as help them be more creative.

Procedure:

1. Take the class to an inspirational natural setting and have students sit in a circle so that they can see each other. Firmly explain to them that this class is based on discussion, writing, and listening, and they absolutely must respect each other.
2. Have a brief intro discussion. How many of the students like to write? Why? How many do not? Why? Tell the students that the writing they will do today is for themselves. There will not be a specific topic, but instead they can write about anything they would like. Also, point out that no one will read their work except them.
3. Next discuss the habitat they are in and why they are there. Ask why they wanted to go on the Sound to Sea trip. Have they ever gone camping? What do they enjoy about it? Do they take walks? Where? This simple discussion will steer the students into thinking about and enjoying their present environment, and will take their mind off the "task" of writing.

4. Next, ask the students to describe something from the area. For example, ask the following questions about a nearby tree:
 - How does the tree look?
 - How does the tree feel?
 - What sound does the tree make?
 - What does the tree taste like?
 - What does the tree smell like?
 - What does the tree think about?
 - What does the tree sing?
 - What does the tree tell you?
5. Ask the students, “If you had never seen any trees, but were instead reading about one for the first time, based on the descriptions we just gave, what would you know about trees?”
6. Next read something short from a nature author to show the value of writing descriptively about nature. Point out that the writing style is less formal, and that some sentences lack punctuation and may even be only one word long. (This could take as long as twenty minutes to read and discuss or just a few minutes depending on how long your class is.)
7. Now have your students choose their own writing tools. Tell them they must sit away from other people. Explain that they should write about whatever comes to mind about their surroundings. Remind them to use all of their senses and their imaginations as they did for the tree, to pay attention to how they feel, or feel free to omit punctuation.
8. After 20-25 minutes (it will be apparent when students are finished!) regroup into the original circle. Have the students read silently through their own writings and underline one or two of their favorite lines (They can use a very descriptive word if they have trouble finding something to share.)
9. Go around the circle and have students share that word or line. Allow students who feel uncomfortable to pass, but remind them to feel pride in their writing. Remind students to be respectful of each other, but to comment on each other’s writing if they choose.
10. Have students decide what order they would like these lines to go in to form a collective poem. Have a few students be responsible for writing these lines down EXACTLY as they are read to them. Brainstorm a title. Hang it in the classroom with pride! If time allows, you could have students write out their favorite line on pre-cut construction paper and then have students manipulate lines to form a poem. Tape these together to form a quilted poem.
11. In a brief closing discussion ask the students, “How did you feel about writing today rather than in school? Was it easier for you? Did you have a lot to say?”

POND HABITAT: WATER WE DOING

(Any grade)

Objectives: By the end of this lesson students will be able to:

- Calculate the amount of water they use in a single day
- Understand our need for water and water conservation

Materials: One worksheet per student

Procedure:

1. Ask students what sorts of things they use water for on a daily basis. Weekly?
As the students brainstorm, write these activities on the board.
2. Explain to the students that we are going to keep track of our water usage for one day.
3. Give each student this worksheet and have them keep track of their water usage for the next 24 hours. Included is a sample worksheet for younger students. For older students you can include laundry, cooking, and outdoor uses.
4. The following day convert the amount of water they have used into gallons.
5. Discuss the amount of water the entire class uses. You can use other math skills by listing the individual totals on the board and having students calculate the average, mean, etc.
6. Brainstorm with your class where fresh water comes from on the earth. Discuss the limited amount of water on earth and some ways they can help conserve that water in their everyday lives.
7. For enrichment you can have students go to the website www.earthday.net and figure out how they use other natural resources in their daily life.

Water We Doing?

Directions: For the next 24 hours, try to keep track of the water that you use directly. Use the data table below to monitor your water usage. Tomorrow in class we will convert your usage into gallons.

Type of Usage:

Quantity:

Flushing the Toilet	
Shower (number and length in minutes)	
Brushing Teeth	
Washing Hands	
Drinking (number of 8 oz drinks)	

On the back of this sheet you can also keep track of water used for laundry, cooking, dish washing, and outdoor needs.

Water Usage Survey Results and Interpretation

- 1. Flushing the toilet:** Standard toilets use 3-5 gallons/flush. An ultra-low flush toilet uses 1.6 gallons/flush
- 2. Shower:** Standard showerheads use 5-7 gallons/minute. Low-flow showerheads use 2-3 gallons/minute. The average shower lasts 7.5 minutes.
- 3. Brushing Teeth:** Wet brush and rinse briefly: ½ gallon. Leave tap running: 5-10 gallons.
- 4. Washing hands:** Fill Basin: 1 gallon. Tap running: 2 gallons.
- 5. Drinking:** 1/16 of a gallon per 8oz. Glass

For your information, here are water usage levels for other common household activities.

Washing dishes: 5 gallons/load if washing and rinsing in sink/pan. 30 gallons/load with tap running.

Automatic dishwasher: Short cycle: 7 gallons. Full cycle: 16-20 gallons

Washing Machine: Small load: 27 gallons. Large load 60 gallons.

Bath: full tub: up to 50 gallons

Washing Car: ½" hose running, 8 gallons/minute

Source of Data: Wholy water Purification Service & United States Geological Survey (USGS)

GLOBE WATER QUALITY DATA

WHAT IS “GLOBAL CHANGE” AND WHY DO WE CARE ABOUT IT?

If you look at any major research institution in the world you will notice that one of the most intensive areas of study is Global Change. Global Change is the study and quantification of the changes that have been made to the entire terrestrial environment because of human interaction. What we have been learning from our studies of the Earth as a whole is that no one single action is isolated. Destroying wetlands in Iowa affects the salt marsh in Florida. Every alteration we make to our environment has an effect **globally** - hence Global Change. What we haven't really learned is what will happen next. We can look at satellite images of a storm in the Sahara bringing dust from deforested areas up into the jet stream. We can see the jet stream carrying that dust to the Philippines where it gets rained out. We couldn't predict the storm in the Sahara or the downpour in the Philippines. We don't know what effect the loss of soil will have on the areas of the Sahara that lost it. Global Change is about figuring this out. In order to be better caretakers of the planet we need much more information about how our Earth system works. So, how are scientists going to do it? How are they going to quantify and study the ENTIRE EARTH?! That's a huge job and as a matter of fact they can't do it alone.

WHAT IS THE GLOBE PROGRAM

Scientists interested in global changes studies have always been thwarted by the lack of data to analyze and of methodologies. How can you talk about global change if you only know the temperature in New Bern, NC for a year? How do you study the entire Earth if it's never really been done before. A lot of thought was put into the solution of these problems and the scientific community came up with the GLOBE Program.

Global Learning and Observations to Benefit the Environment (GLOBE), is a program bringing students and teachers into the heart of the study of global change. It is one of the first programs to explore the state of the Earth as a biosphere, a living whole with complex interconnecting parts. In GLOBE, students and teachers from around the world gather the critical data that scientists don't have to better understand the myriad of interconnections between the land, water and air of Planet Earth. They are working in a global community, providing measurements urgently needed by the scientists and therefore by everyone who wants to understand better how the Earth works. Students contribute their data to the GLOBE databases and share with scientists and with other students throughout the world

The GLOBE Program is worldwide, with scientists doing real research. Every school has a study area, and within that area, several study sites. These are outdoor areas where students taking certain critical measurements. Each GLOBE Study Site can be seen as a single, large and intricately connected study area. When studied all together, using the same instruments, these study areas will yield a portrait of our planet that is both valuable and convincing and can help us answer that most important question - what is going to happen next?

This is an historic program, both for its science and for its education. Each one of us, each teacher, each student, each scientist, has a responsibility and an opportunity to do our best work for one another and for our world.

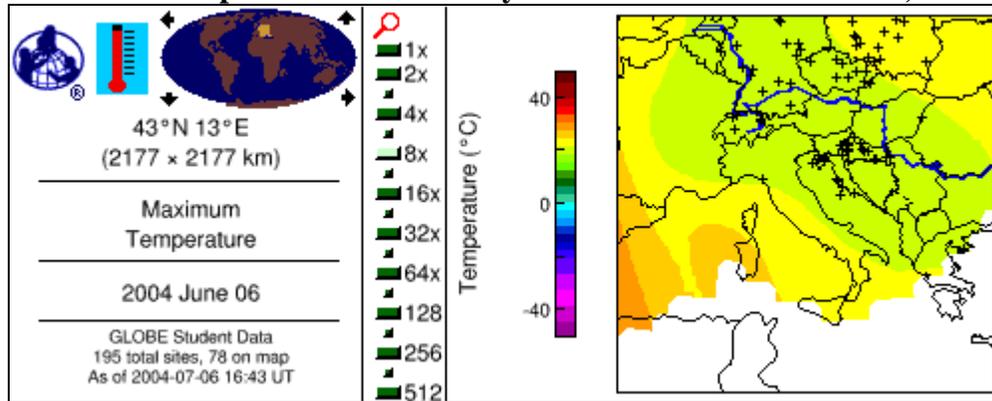
HOW DOES ALL THIS AFFECT MY CLASSROOM?

Hundreds of thousands of GLOBE K-12 students have reported over 4 million local observations, contributing to greater understanding of Planet Earth. Students and teachers can then use the internet for data analyses and research. The GLOBE program offers students opportunities to conduct real scientific research. As a teacher, GLOBE allows you to incorporate hands on scientific research into your local curricula in support of NC standards. What's more, students are helping scientists around the world with the data they have collected.

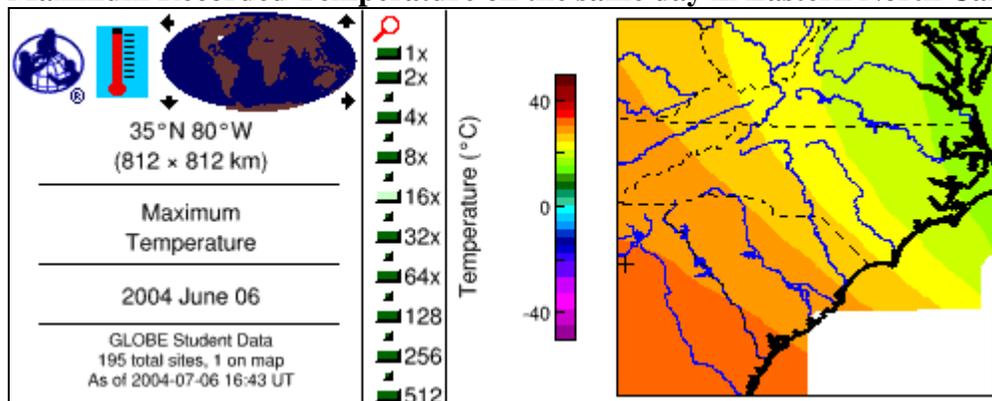
SOUND TO SEA PARTICIPATION:

While your students attended Sound to Sea their instructor may have done a water quality test of the sound water. This data is then recorded on the World Wide Web. We would like to encourage teachers and students to study the data recorded here at Trinity Center. This site allows you to look up your data and compare it to other water sources around the state, country, and world. For example, you can get on the internet, and compare the daytime temperatures taken when your students participated in our program to the daytime temperatures taken on the same day by students at schools in Italy!

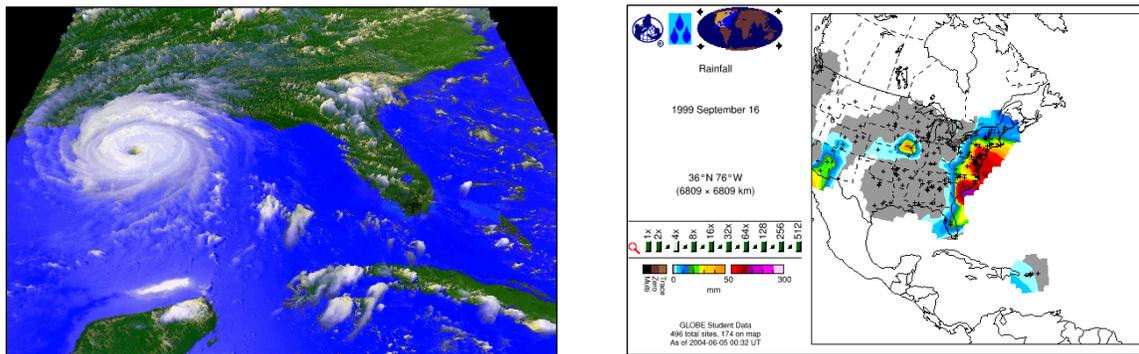
Maximum Temperature Recorded by GLOBE Students on June 6, 2004 in Italy



Maximum Recorded Temperature on the same day in Eastern North Carolina!



You can have your students look up the water quality of a water source near your school and compare it to ours at the coast. You can compare rainfall amounts during various hurricanes, or view satellite images of the storms. The possibilities are endless!



To retrieve your data follow these steps:

- Go to the globe web site: www.globe.gov
- Click on *schools* located in the right hand column of the home page
- Enter *Trinity Center* into the School, City, or Teacher Name Search
- Click on *Data*
- We only observe the water quality so you will need to check *Surface Water*. Tests commonly done here are:
 - Temperature
 - PH
 - Dissolved Oxygen
 - Turbidity
 - Salinity
- **Have Fun!**

BECOME A GLOBE SCHOOL:

Classroom teachers are often looking for new ways to enrich their science curriculum with hands on activities. GLOBE provides the opportunity for students to take scientific measurements in the fields of atmosphere, hydrology, soil, and land cover. Some of these could be taken on your school grounds. Students can then report their data on the GLOBE website where they can also create maps and graphs. You can get your school involved with the GLOBE program by visiting their web site. They will offer you training at professional workshops, teacher guides, videos, and other materials. If you are interested go to www.globe.gov and click on *Learn About Globe*. Have Fun!

TOP 10 GREEN BOOKS FOR KIDS

Fun with Nature and More Fun with Nature by Mel Boring, Diane Burnes, and Leslie Dendy. Publisher: T&N Children's Publishing, 2000. ISBN: 0559717025 and 1559717955 (*Provides beautifully detailed descriptions and illustrations of over 150 animals and plants, and teaches readers where to find each, what they eats, what eats them, and what they're used for.*)

Our Earth, Ourselves: The Action-Oriented Guide to Help You Protect and Preserve Our Environment by Ruth Caplan & the staff of Environmental Action. Publisher: Bantam, 1990. ISBN: 0553348574 (*Many green environmental primers bombard the reader with alarming statistics that pointedly uncover our ongoing environmental deterioration, but Our Earth, Ourselves patiently explains each issue, and shares simple things a consumer can do to help clean up the earth.*)

Good Planets Are Hard to Find: An Environmental Information Guide, Dictionary, and Action Book for Kids (And Adults) by Roma Dehr, Ronald Bazar, Nola Johnston. Publisher: Firefly Books Limited, 1990. ISBN: 0919597092 (*An environmental information guide for kids.*)

50 Things Kids Can Do To Save the Earth by Earth Works Group. Publisher: Sagebrush Bound, 1999. ISBN: 0833544721 (*This valuable and entertaining book shows children how specific elements of their environment - like a light switch or a toilet - are connected to the rest of the world.*)

A Crow Doesn't Need A Shadow: A Guide to Writing Poetry from Nature by Lorraine Ferra. Publisher: Gibbs & Smith 1994. ISBN: 087905602

Two Minutes A Day for A Greener Planet by Marjorie Lamb. Publisher: Harper Collins, 1991. ISBN: 0061040215 (*Quick and simple things we can do to save the planet.*)

Hatchet by Gary Paulson. Publisher: Simon and Schuster, 1999. ISBN 0689826990 (*After a plane crash, thirteen-year-old Brian spends fifty-four days in the Canadian wilderness, learning to survive with only the aid of a hatchet given him by his mother, and learning also to survive his parents' divorce.*)

Watching Nature by Monica Russo. Publisher: Sterling Publishing Company, 2002. ISBN 1402701306 (*Describes how to make close-up observations of nature and how to record what you see, including recognizing field marks, identifying plants, noting characteristic sounds, and watching specific animal activities.*)

The Gift of the Tree by Alvin Tressalt. Publisher: Harper Collins 1992. ISBN: 0688106846 (*Traces the life cycle of an oak tree and describes the animals that depend on it for shelter and food.*)

Just a Dream by Chris Van Allsburg. Publisher: Houghton Mifflin Co. 1990. ISBN: 0395533082 (*When he has a dream about a future Earth devastated by pollution, Walter begins to understand the importance of taking care of the environment.*)

THE BEST OF THE SOUND TO SEA LIBRARY

Over the years the Sound to Sea program has put together quite a library of books and resources to help teach classes. Though it sometimes seems to our students that we know everything about the habitats on Bogue Banks, it just isn't true. ☺ When we find a new critter in the sound, we look it up. When we have a new lesson plan idea, we research it. When a student asks us an unanswerable question, we look to our resources. We would like to share some of our favorite resources with the teachers who visit us. We hope you find them useful for your classroom. Of course, we would also love to hear from you if there is a book in your library you find indispensable. Educators are our own best resources!

Nature Guide to the Carolina Coast by Peter Meyer. Avian-Cetacean Press: Wilmington, NC. 2000. ISBN: 0962818607 (*This book is given to each new Sound to Sea instructor. It offers fun, easily understood scientific background on the animals and plants of the coast. It contains both drawings and color photos for easy identification, and is full of fun facts kids love!*)

The Oceans: A Book of Questions and Answers by Don Groves. John Wiley & Sons: New York, NY. 1989. ISBN: 0471607126 (*Sound to Sea instructors do not have all the answers, but this book does... well most of them anyway. Covering complex subjects such as tides, waves, sea animals, and even meteorology this book is great for fact finding.*)

Sea Turtles: An Ecological Guide by David Gulko and Karen Eckert. Mutual Publishing: 2004. ISBN: 1566476518 (*One animal that always grabs students' attention is the sea turtle. Is it their amazing size, or that they were around during the time of the dinosaurs? No matter the reason, we have found Sea Turtles: An Ecological Guide to be helpful in answering our questions. This book has been instrumental in the development of our Beach Walk Turtle Talk program.*)

The Seaside Naturalist: A Guide To Study at the Seashore by Deborah A Coulombe. University of New Hampshire. 1992. ISBN: 0671765035 (*Filled with great drawings and easy to understand descriptions, this book can help even a novice beachcomber explain the biology of sea creatures. Written with the student in mind, it has fun quizzes and activities at the end of each chapter.*)

Tideland Treasures by Todd Ballantine. University of South Carolina Press. 1991. ISBN: 087249795X (*The drawings and descriptions found in this book provide information about several of the habitats at Sound to Sea. The marsh, sound, maritime forest, and ocean are explained along with the interconnectedness of the animals and plants that share our favorite places.*)

Worms Eat My Garbage by Mary Appelhof. Flower Press: Kalamazoo, MI. 1997. ISBN: 0942256107 (*After learning all about waste and the three R's in our dining hall, you'll want to start composting in your home or school. This great how to book will help you get started.*)

The Underground Railroad and *YOU*

Now that your school group has experienced what it was like to be on the Underground Railroad you may be asking what you can do to help. We encourage you to take action. Your voice is important and can be heard. The best defense against any injustice is to educate yourself. What follows are some ideas to help you continue your search for the truth about the past and to fight for justice in the future.

Here are Sound to Sea's top five websites to help you learn about the underground railroad's history in the United States. Or just do a search using key words: Underground Railroad.

Use the Web to Learn More on the Underground Railroad

www.freedomcenter.org

www.nationalgeographic.com/features/99/railroad

<http://www.the-ugrr.org/>

http://afgen.com/underground_railroad.html

<http://www.spartacus.schoolnet.co.uk/USASunderground.htm>

These are two great sites to help you learn about slavery today and ways you can help.

Learn More about Slavery Today

www.iabolish.com

<http://www.anti-slaverysociety.addr.com/toc.htm>

Some Books You Could Read Include:

For Students:

- *Dream Freedom*, by Sonia Levitin **for ages 10 and older**
- *Slavery Today*, by Kaye Stearman **for ages 9-12**

Teacher's reference books:

- *My Folks Don't Want Me To Talk About Slavery* Edited by Belinda Hurmence
- *When I Just Can Remember* Edited by Belinda Hurmence
- *Slavery Today* by Kyle Stearman

Make Your Voice Heard

The citizens of the United States of America count on freedom as one of our basic rights. Many of us, however, do not exercise this right. In the worldwide fight against slavery your voice is needed. Here are some addresses of national and international leaders you can use to write letters and be heard. (*Celebrity Activists addresses are current as of 2000. If you have any difficulty with any of these addresses, contact the folks at www.iabolish.org at 1-800-884-0719 for any updates they may have.)

President George W. Bush
1600 Pennsylvania Ave.
Washington, DC 20500

Secretary of State Condoleezza Rice
US Department of State
Washington, DC 20520
secretary@state.gov

Secretary General of United Nations
Kofi Annan
U.N. Headquarters S-3800
New York, NY 10017

Rev. Jesse Jackson
Rainbow-Push
930 East 50th Street
Chicago, IL 60615

Kim Gandy
National Organization for Women
PO Box 96842
Washington, DC 20090

Maya Angelou
Wake Forest University
1834 Wake Forest Road
Winston-Salem, NC 27106

Whoopi Goldberg
555 Melrose Ave Suite 1648
Los Angeles, CA 90038

Toni Morrison
African- American Studies Program
Princeton University
21 Prospect Ave
Princeton, NJ 08544

Danny Glover
C/O Carrie Productions
41 Sutter St. Suite 1648
San Francisco, CA 94104
Susan Sarandon
501 South Beverly Drive Suite 300
Beverly Hills, CA 90212

Or Email your Senator from their websites:

North Carolina:

Elizabeth Dole (R)
<http://dole.senate.gov>

Richard Burr (R)
<http://burr.senate.gov>

LOOKING FOR ENVIRONMENTALLY SAFE BEAUTY AND HOUSEHOLD PRODUCTS?

BEAUTY: Lip Balm, Soap, Shaving Cream, Toothpaste, Make-up,
Shampoo, Bath Products, etc.

Kiss My Face
1-800-262-KISS
www.kissmyface.com
Based in Gardiner, NY

Burt's Bees
1-800-849-7112
www.burtsbees.com
info@burtsbees.com
Based in Raleigh, NC

Bath and Body Works
www.bathandbody.com
Based in New Albany, OH

Tom's of Maine
1-800-775-2388
www.tomsofmaine.com
Based in Kennebunk, ME

The Body Shop
1-800-BODYSHOP
www.usa.the-body-shop.com
Based in the U.K.

HOME: Toilet Paper, Plastic Bags, Paper Towels, Facial Tissue, Detergents,
Recycled Products..

Seventh Generation
802-658-3773
www.seventhgen.com
recycle@seventhgen.com
Based in Burlington, VT

Marcal
(Eco-Friendly Paper Products)
Look for this Brand in your Supermarket!
608-356-8336
Based in Baraboo, WI

Ecomart
1-888-326-2223
www.humanemfg.com
Based in Cleveland, OH

GENERAL: A great source for any other eco-friendly product you can think of!

Harmony Catalog
A mail-order catalogue filled with Earth-friendly products and gifts.
1-800-869-3446 for a free catalogue.

1998 Buyer's Guide to Recycled Products: www.prc.org/guide/prodindx.html

Earth Day Every Day

Green your Classroom...Earth day every day!

This year, you can make school exciting by taking some time to “green” your classroom! How? By doing everything you can to make it clear that you and your classmates are friends of the earth. Below are just a few projects that you might want to try. Once you get started, you are bound to come up with ideas of your own!

- ❖ **Reuse and Recycle:** Set up a box for paper that has only been used on one side. Reuse this paper for math problems and other assignments. Set up another box for paper that needs to be recycled.
- ❖ **Save Energy:** Make special signs for the light switches in your classroom reminding people to save energy by turning out the lights
- ❖ **Conserve Resources:** If your classroom has a sink, make a sign to put over the faucet that reminds people not to waste water. Replace paper towels with reusable cloth towels.
- ❖ **Create a Book Nook:** Start a classroom collection of books about the environment. Share books from home, borrow books from the library, have your teacher purchase books, or write your own.
- ❖ **Notice the News:** Collect articles about the environment from magazines and newspapers. Display your news on a bulletin board covered with colored cloth.
- ❖ **Take Action:** Start a student environmental action club. All you need is a few friends and a problem to solve. Check out the internet for ideas.
- ❖ **Write Letters:** Find out more about environmental issues that interest you by writing to organizations working to protect the planet. Store the information you receive in a place where everyone in your class can use it.
- ❖ **Grow Something Green:** Start an indoor garden. Bring in houseplants from home or grow your own plants from seeds or cuttings. Make sure that your green friends get plenty of water and sunlight!
- ❖ **Set up a Tip Tree:** Use colored paper to create a tall tree on one of the walls in your classroom. Cover this tree with helpful Earth-saving tips written on green, leaf-shaped pieces of paper.
- ❖ **Feed the Birds:** Set up a feeder outside your classroom window. Use a guidebook to help you figure out what kinds of birds stop by to visit. Make models of these birds out of cardboard and colored paper and hang from your ceiling.

Zero Waste Lunch...Learn to pack an eco-lunch

Even if you're already recycling, there are still more ways you can help to reduce waste, such as making sure you have a "zero waste" lunch. A group called Project Eco-School offers some good ideas:

- ❖ **No Disposables:** The average kid goes to school 180 days every year. If you're bringing your lunch to school in a paper or plastic bag, that's 180 pieces of trash! Instead of piling up the waste, use a lunch box or fabric bag. There are many canvas or nylon bags you can buy.
- ❖ **No Prepackaged Single Serving Containers:** Parents often buy single servings of juice, chips, yogurt or desserts for a "treat." But since each "treat" is packaged individually, it is also a single serving of waste. Instead, you can buy larger amounts of the stuff you like, then pack it in smaller, reusable containers.
- ❖ **Use Reusables:** Get your parents to pack sandwiches and snacks in Tupperware, Rubbermaid, or empty yogurt or other food containers. Use them over and over again. Check the bottom for the plastic recycling code to be sure you can recycle them when they eventually crack. Also, use plastic water bottles for beverages.
- ❖ **Use Recyclables:** Remember, materials like aluminum cans, glass bottles, and some plastics are recyclable. If your school doesn't have recycling bins, be sure to bring them home for re-use or recycling. Otherwise, they end up as waste. Also, talk with your teachers about setting up a recycling program, or having your class be responsible for bringing recyclables to the appropriate recycling stations once a month.
- ❖ **Don't Use Styrofoam:** Styrofoam is mostly a one-time use item. It is difficult to recycle and harms the ozone layer when it is manufactured.

To contact Friends of the Earth, explore <http://www.foe.org>, or call 202-783-7400.

GREEN WEBSITES

Ecology

www.ecology.com - GREAT Resource for current environmental and scientific information.
www.greenscreen.org - Ecological articles written for kids by kids! Read and learn then write and teach!
www.enature.com - Online field guides
www.estuarylive.org – Take a virtual field trip to the Estuary on EstuaryLIVE!

Human Impact

www.earthday.net/footprint - Calculate your ecological footprint to measure the impact YOU have on the earth!
<http://cfpub.epa.gov/surf/locate/index.cfm> - Find your watershed address!

Advocacy

<http://www.biodiversity911.org/EducationalResources/EducationalResources.html>
Whether you're planning a teaching unit on biodiversity or simply need more information, this is a great site hosted by the World Wildlife Fund. Check out the games section – “Fish Stew” is a great follow up to Squid Dissection!
<http://www.nrdc.org/greensquad> - The National Resources Defense Councils website for kids – Learn how your school can be more Green!
www.amnesty.org - Amnesty International: Human Rights Issues and Activism
www.antislavery.org - Current Slavery Issues

Government Sites

<http://oceanservice.noaa.gov/welcome.html> - National Oceanic & Atmospheric Administration's website offering tons of information including a wonderful Education Section which has a library of great lesson plans.
www.education.noaa.gov - NOAA's education department has great information and activities for students, and teachers, about weather, climate change and marine science!
www.epa.gov/teachers - The Environmental Protection Agency provides this website with information, ways to get students involved, and places to get help and recognition of your hard work!
www.wildlife.state.nc.us - The North Carolina Wildlife Resources Commission discusses issues of NC wildlife management *and* has a section dedicated to kids who love the outdoors!

Ocean Life

http://www.nhm.ac.uk/hosted_sites/tcp/ - The Cephalopod Page! For more information on squid and their relatives!
<http://www.acsonline.org/education/index.html>
The best way to protect whales, dolphins, porpoises, and their habitats is by getting educated. The American Cetacean Society's wonderful website includes easy-to-understand teaching aids for self-study and traditional curriculum
www.ccourtles.org - Want to track a sea turtle? Or learn more about these fabulous creatures and how to help protect them? Check out this website!
www.cmc-ocean.org - Information on current oceanic issues and threats.

Check out our Sound to Sea Home Page

www.trinityctr.com/soundtosea

We've been looking for ways to make your job easier! We know how much work it is to put together a field trip, and how much extra work it takes to teach your students the background knowledge they need to prepare them for their trip to Sound to Sea. We have created our new kids' webpage in the hopes that you can incorporate it into your lessons to help prepare the students for their learning experience. Even if there is no time for them to study in class -- you can assign it as the most enjoyable homework!!

What's Available on our new Sound to Sea KIDS PAGE?

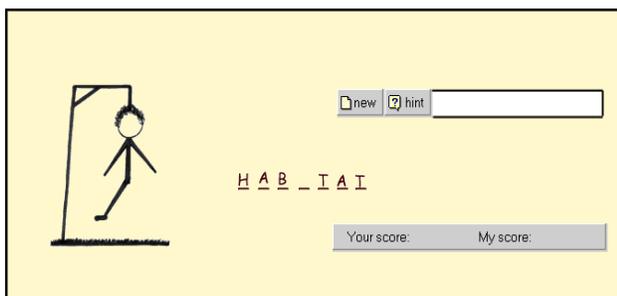
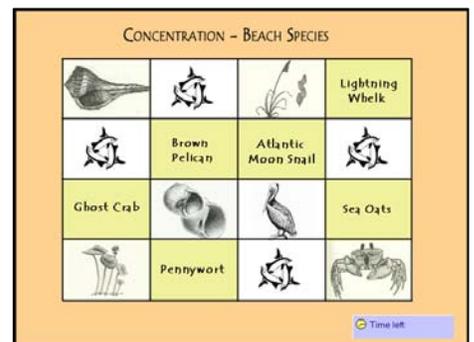


- Interactive games and activities like habitat concentration, ecological hangman or click on our critter pages for great information about all the species you found at Sound to Sea!
- Biographies of our talented staff of Sound to Sea instructors
- A map of Trinity Center so they can get oriented to the property
- Dozens of fascinating links to interactive websites covering information about each habitat

We hope to make it easy for you to create the lasting educational experience you want for your students. We believe that these web-based learning games will help your students learn and retain more information when they come to Sound to Sea. We hope that you will use them to stimulate your students' interest in ecology, conservation and the coastal region.

Concentration:

We have created concentration games for each habitat on the barrier island. After your students have learned about the creatures that live in these coastal habitats, they can test their knowledge by trying to match the pictures of various species to their common names.



Ecological Hangman:

You can also test your student's barrier island vocabulary with Ecological Hangman. The students can play over and over as the game boasts an extensive vocabulary of terms that will help prepare them for Sound to Sea!