

Changes in Materials for *Ecosystems*

Since publication of the *Ecosystems* Teacher’s Guide and Student Investigations book, delivery of the video component of the unit kit, *Living on the Edge*, has changed.

The video *Living on the Edge* is no longer included in the unit kit. If you have implemented the STC Program™ in your classroom, then visit www.carolinacurriculum.com/premium to create a Carolina™ Curriculum Premium Content account. To access Premium Content for the *Ecosystems* unit kit(s) purchased, you must activate the content using the Teacher Access Code(s) that you received inside the kit(s). Once activated, your Premium Content account allows access to electronic delivery of the Chesapeake Bay Foundation video, *Living on the Edge*. Premium Content accounts also include access to additional activities, videos, blackline masters, and other STC Program™ resources.

This change affects Lesson 14 of the Teacher’s Guide and requires revisions to the instructions in the unit’s printed materials.

Please replace the pages in your texts with the pages provided.

This errata set includes the following:

- For the *Ecosystems* Teacher’s Guide Second Edition, Section 3: Materials Management and Safety—revised pages 5–7, and 11
- For the *Ecosystems* Teacher’s Guide Second Edition, Section 4: Unit Investigations and Blackline Masters—revised pages 134 and 136
- For the *Ecosystems* Teacher’s Guide Second Edition, Section 7: Student Reading Resources—revised page 18
- For the *Ecosystems* Teacher’s Guide Second Edition, Section 8: Additional Learning Resources—revised page 7

- For the *Ecosystems* Second Edition Student Investigations book—revised page 68

Photocopy and distribute these replacement pages as needed.

If you have questions about these changes or about the module in general, call Carolina’s product information staff at 800-227-1150 (8 a.m.–5 p.m. ET, M–F), or email stc@carolina.com.

Company must receive your order for each group at least 10 business days before your requested delivery date. (If you wish, you can place both orders simultaneously, before you start the unit.) For this unit, you will receive the live materials in two separate shipments.

Before you submit your live materials order, remember to do the following:

- Choose your desired date of arrival. It should be a Wednesday or a Thursday because your live materials will be shipped on a Monday or a Tuesday.
- Indicate the requested date of arrival on each order sheet.
- Before these dates, prepare for the arrival of the organisms. Collect the needed water and store it in your room to equalize the temperature (see **Care and Handling of Live Materials**, pg. 27). Gather the materials not supplied (see pg. 7) to prepare the organism holding tanks.

- Alert your school's front office to the expected arrival date. Arrange for the boxes to be brought to your room **immediately** upon delivery. Plan to teach the lesson soon afterward.
- Find out whether exterminators are scheduled to visit your school. If so, be sure they do not treat your classroom while you are teaching the unit.
- Open the carton and remove the organisms as soon as they arrive (see **Care and Handling of Live Materials**, pg. 27). Label everything.
- Preview each lesson. Some have specific suggestions for handling the live materials needed that day.

If you are not using the *Ecosystems* unit kit from Carolina Biological Supply Company, be sure to contact your supplier to establish a delivery schedule.

Materials List

This Materials List chart is a cross-reference guide for the materials supplied in the *Ecosystems* unit kit (Item Number 97-2801). It gives the description of each item as it is listed in the lessons of the Teacher's Guide, and provides the cross-reference description of the item as it appears on the kit's packing list, which you will find in the *Ecosystems* unit kit box(es). Please note that the metric and English equivalent measurements in this unit are approximate. For additional information about the materials in this unit kit, please contact Carolina at 800-227-1150 or www.carolina.com.

Item Description in Teacher's Guide	Item Description on Packing List	Lesson Number (Quantity Used)
Alfalfa seed	Pack of alfalfa seed	2 (650)
Aquarium thermometer	Aquarium thermometer	4 (1)
Bottle of tap water conditioner	2-oz bottle of tap water conditioner	Use for live materials setup
Clear plastic cup, 300 mL (10 oz)	Pack of 50 10-oz plastic cups	2 (45), 3 (30), 4 (15), 6 (30), 11 (8), 13 (8)
Cup, 30 mL (1 oz)	Pack of 60 1-oz paper cups	2 (3), 8 (15)
Cupful of gravel	5-lb bag of aqua gravel	2 (6600 mL), 3 (6600 mL)
Cupful of soil	17-liter (16-qt) bag of potting soil	2 (13,200 mL)
Dropper	Pack of 15 plastic droppers	2 (15), 3 (15), 4 (15), 8 (15), 11 (8)
Fine-point permanent marker	Pack of 15 fine-point permanent markers	2 (15), 3 (1)
Funnel	5-in plastic funnel	11 (8)
Grass seed	Pack of rye grass seed	2 (650)

Item Description in Teacher's Guide	Item Description on Packing List	Lesson Number (Quantity Used)
Hand lens	Pack of 16 hand lenses	2 (15), 3 (15), 4 (15), 5 (15), 6 (15), 7 (15), 12 (15), 13 (8)
Holding tank and lid	1 ½-gal plastic tank	Use for live materials setup
Knife with a sharp point	Retractable knife	6 (1)
Living Materials Order Form 1		
Jars of algae	Jars of algae	3 (198 mL)
<i>Gambusia</i> (mosquito fish)	<i>Gambusia</i> (mosquito fish)	4 (30)
Duckweed plant	Duckweed plants	3 (330)
Pond snail	Pond snails	4 (30)
<i>Elodea</i> sprig	<i>Elodea</i> sprigs	3 (44)
Living Materials Order Form 2		
Isopod	Isopods	6 (30)
Cricket	Crickets	6 (30)
Medium-sized binder clip	Pack of 15 medium binder clips	Use to prepare bottles
Metric ruler	Pack of 15 metric (12-in) plastic rulers	3 (15), 4 (15), 6 (15)
Mustard seed	Pack of mustard seed	2 (650)
pH test paper	Roll of pH test paper	8 (60 in), 10 (1), 11 (192 in), 12 (128 in)
Piece of fiberglass screen, 10 cm (4 in) square	Pack of 22 4×4" fiberglass screens	2 (22)
Plant food	Container of plant fertilizer	11 (1)
Salt	1-lb of salt	11 (1)
Sealing tape, 5 cm (2 in)	Roll of 2-in clear packing tape	7 (1)
Set of measuring spoons	Metric measuring spoon set	11 (8)
Small dip net	Aquarium dip net	4 (6)
Spoons	Pack of 16 plastic teaspoons	2 (15), 3 (15), 4 (15), 6 (30)
Video, <i>Living on the Edge</i> *	<i>Living on the Edge</i> video	14 (1)
Vinegar	Pint bottle of white vinegar	8 (1), 11 (1)

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Needed But Not Supplied Materials

The following chart lists the materials that are needed for teaching *Ecosystems*, but are not supplied in the *Ecosystems* unit kit from Carolina Biological Supply Company. These items are commonly available in most schools or can be

brought from home. Designed as a quick reference guide, the chart shows the materials that are needed for each of the 17 lessons and Assessment 1. It will enable you to begin gathering the materials needed ahead of time.

Description in Teacher's Guide	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Assm't 1
Newsprint	×				×		×	×						×	×		×	
Overhead projector	×						×										×	
Overhead transparencies	×				×			×						×				
Science notebook	×	×	×	×	×	×	×	×	×		×	×	×	×				×
Buckets or dishpans		×	×	×														
Leaf matter		×																
2-liter clear plastic soda bottles w/caps		×	×			×	×				×							
Paper towels		×	×	×							×							
Rags or sponges		×	×	×							×							
Rocks		×																
Small rubber bands		×																
Toothpicks		×																
Twigs		×																
Water		×						×										
Whisk broom		×	×	×							×							
45 liters (12 gal) of prepared water			×															
Newspapers			×								×							
Markers					×		×	×						×	×		×	
Index cards						×												
Scissors							×											
Computer with Internet access														×				
Tape or tacks to hang newsprint sheets																×		

Materials for Holding Tanks for the Organisms:

For the aquarium plants and animals

- 1-gal milk jugs (3), rinsed (no soap), with tops cut off to hold the duckweed.
- Aquarium plants, spinach, lettuce, or fish food for the snails.

For the crickets and isopods

- Egg carton, crumpled paper, or leaves and twigs for cricket tanks.
- Lettuce, potato, apple, seeds, grass, or dog kibble for crickets.
- Leaves, bark, or potato slices for the isopods.

Ecosystems Time Line (continued)

Activity	Estimated Time Needed	Number of Sessions Needed	Estimated Starting Date
Lesson 9	Presentations and observations: 50 min. Reading selections included.		
Lesson 10	Lesson: 40 min. Groups complete Record Sheet 10-A: 30 min.		
Lesson 11	Lesson: 45 min. Final activities: 30 min.		
Lesson 12	Lesson: 50 min.		
Break: observe pollution effects, or do other activities.	3–4 days.		
Lesson 13	Lesson: 50 min. Record Sheet 13-A included.		
Lesson 14	Lesson: 45 min. Reading selection included. <i>Living on the Edge</i> video: 15 min.		
Lesson 15	Lesson, point-of-view sheets, and Record Sheet 15-A: 50 min. Final activities: 30 min.		
Lesson 16	Group presentations: time needed depends on type of presentations selected. Final activities: 30 min.		
Lesson 17	Post-unit assessment: 50 min.		
Additional Assessments	Time needed depends on which assessment(s) you choose to complete. Assessment 1: 20 min. Assessment 2: 45 min.		

The Chesapeake Bay: An Ecosystem in Danger

Location

Lesson 14

Content and Context

Having conducted their own pollution experiments, students now take on a real-life environmental challenge: the threats to the Chesapeake Bay ecosystem. This selection, supplemented by five additional selections in Lesson 15 that present the pollution problem from five perspectives, provides students with background information they will need to prepare presentations on the bay in Lesson 16.

Introducing the Reader

Ask students whether they have ever heard of the Chesapeake Bay. Using a class map of the United States or the large illustration that appears in the reading selection, help students identify where the bay is located. Focus students' attention on the questions that appear in item 1 of the Final Activities section of Lesson 14 in the Teacher's Guide.

Reading

Have students read the selection individually or in groups or pairs.

Processing the Reader

Students will discuss this reading selection at the beginning of Lesson 15. Help them prepare for this discussion, and process the reading selection, by showing the video *Living on the Edge*. This video is located on the STC Premium Content Web site at www.carolinacurriculum.com.



Audiovisual Resources

Living on the Edge. Written by Tom Horton.
18 min. Chesapeake Bay Foundation,
1992.

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Living on the Edge presents a portrait of life along the edges of the Chesapeake Bay—the marshes and shallows, wildlife, and people. It explores the pollution of the bay and suggests some solutions.

Crane River. 60 min. National Audubon Society,
1989.

A stunning video about the plight of the sandhill cranes in Nebraska. Explains the cranes' unique habitat requirements and how these are fulfilled by the Platte River. Details the controversy over the water rights to the river.

Materials

Management Tip: Because this is a long lesson, you may want to integrate the Chesapeake Bay reading selection into your language arts or social studies time. Or, you may want to assign it as homework.

For each student

- 1 science notebook
- 1 completed **Record Sheet 13-A: Analyzing the Results of the Pollution Experiment**

For the class

- 3 sheets of newsprint or transparency film and markers
- Living on the Edge*, a video about the Chesapeake Bay
- Computer with Internet access

Preparation

1. Obtain the materials for recording student ideas.
2. Label the top half of each of the three sheets, respectively, “What We Found Out about the Effects of Acid Rain,” “What We Found Out about the Effects of Road Salt,” and “What We Found Out about the Effects of Overfertilization.” On the bottom half of each sheet, write “What We Predict Would Happen to the Animals in an Ecosystem Polluted with Acid Rain,” and so forth.

Subdivide each sheet into “Terrarium” and “Aquarium” (see Figure 14-1).
3. Decide how best to include the video about the Chesapeake Bay, *Living on the Edge*, and the reading selection in your class’s schedule.

Procedure

1. Ask a team from each group to report the findings from their experiment.
2. Record findings on the sheets. Then ask the other team from each group if they agree, disagree, or want to add new information. Have the students add “agree” or “disagree” to the findings on the sheets.
3. Proceed until the data has been contributed on all three pollutants.
4. Help students draw some conclusions.
 - Reread the three sheets with the class and circle the statements that show total agreement. These represent conclusions backed up by two teams’ collective data.
 - Next, look for the disputed points. Ask students to suggest ways they could clear up the dispute. Two solutions would be either to redo the experiment or to design new experiments to answer the question (see Extension 1 in this lesson).
 - Ask students for reasons why the results differed.
5. Now have students predict what might happen to the animals in an ecosystem polluted with each substance. Record their answers on the bottom half of each sheet.
6. Help students discuss their predictions.
 - Circle statements that agree.
 - Look for the disputed points.
 - Ask students to explain why these predictions might differ.

Extensions

3. Show the video *Living on the Edge*. Discuss the following:
 - What supports much of the life in the bay?
 - How have the millions of people who have moved into the bay area affected it?
 - In what ways do people use the bay? In what ways have people damaged the bay?

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SCIENCE

1. Challenge students to design a new experiment to resolve a disputed point from today's lesson. If possible, have them carry out the new experiment.

LANGUAGE ARTS

2. Invite students to write a story in which one of the characters “jumps to a conclusion” that is not necessarily the right one.

LANGUAGE ARTS

SOCIAL STUDIES

3. Encourage students to do library research to find out more about the Chesapeake Bay, San Francisco Bay, or other bays around the U.S. (see Sections 7 and 8 of this guide for suggested resources on the Chesapeake Bay).

5. Now turn to pg. 69 to read about a real-life ecosystem, the Chesapeake Bay. Record in your science notebook any thoughts you have about these questions:
 - What are the main problems in the Chesapeake Bay?
 - How are the Chesapeake Bay's problems similar to the problems you experienced with your team's polluted ecocolumns (or would have experienced in your own ecocolumns had they been polluted)?
 - Describe a situation where too much of something is going into the bay.
 - Describe a situation where too much of something is being taken out of the bay.
 - After completing the reading selection, describe an ecosystem in your community or another community that has problems like those of the Chesapeake Bay. How do they compare?
6. Remember to continue recording observations for your own ecocolumn and your team's ecocolumn. Keep watering them as well.
7. Your teacher may show you a video on the Chesapeake Bay. If so, think about these questions as you watch:
 - What supports much of the life in the bay?
 - How have the millions of people who have moved into the bay area affected it?
 - In what ways do people use the bay? In what ways have people damaged the bay?

Ideas to Explore

1. Was there some disagreement on the conclusions your class reached today? Design an experiment to resolve the disagreement. If possible, carry it out, too.
2. You have probably heard the expression "jumping to conclusions." Write a story in which one of the characters jumps to a conclusion that is not necessarily the right one.
3. Go to the library to find out more about the Chesapeake Bay or another bay around the U.S.