

Note to Educators

The mission of the Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. For more than 100 years, our motto has been caring for the land and serving people. The Forest Service, U.S. Department of Agriculture (USDA), recognizes its responsibility to be engaged in efforts to connect youth to nature and to promote the development of science-based conservation education programs and materials nationwide.

This Ecosystem Services edition of the *Natural Inquirer* combines research done by the Forest Service and the USGS (U.S. Geological Survey). The mission of the USGS is that of serving the Nation by providing reliable scientific information to describe and understand Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

The *Natural Inquirer* is a science education resource journal to be used with learners from grade 5 and up. The *Natural Inquirer* contains articles describing environmental and natural resource research conducted by Forest Service and USGS scientists and their cooperators. These are scientific journal articles that have been reformatted to meet the needs of middle school students. The articles are easy to understand, are aesthetically pleasing to the eye, contain glossaries, and include hands-on activities. The goal of the *Natural Inquirer* is to stimulate critical reading and thinking about scientific inquiry and investigation while learning about ecology, the natural environment, and natural resources. In this edition of the *Natural Inquirer*, you will find four articles on ecosystems written in the scientific method format.

The Format of a *Natural Inquirer* Article:

Each *Natural Inquirer* article follows the same format. *Natural Inquirer* articles are written directly from a published science article, and all have been reviewed by the scientists for accuracy. Each article contains



the following sections, which you may introduce to your students as they read:

Meet the Scientists:

Introduces students to the scientists who did the research. This section may be used in a discussion of careers in science.

Glossary:

Introduces possibly new scientific or other terms to students. The first occurrence of a glossary word is bold in the text.

Thinking About Science:

Introduces something new about the scientific process, such as a scientific habit of mind or procedures used in scientific studies.

Thinking About the Environment:

Introduces the environmental topic being addressed in the research.

Introduction:

Introduces the problem or question being addressed by the research.

Method:

Describes the method used by the scientists to collect and analyze their data.

Findings:

Describes the results of the analysis.

Discussion:

Discusses the findings and places them into the context of the original problem or question.

Citation:

Gives the original article citation with a Web link to the original article.

Science Education Standards and Evaluations:

In the back of the journal, you will find a matrix that enables you to identify articles by the national science education standards that they address. Evaluation

forms for both educators and students are available on our Web site. We welcome any feedback so please visit <http://www.naturalinquirer.org> and complete the online evaluation forms. Additionally, you may contact Dr. Barbara McDonald at the address below with any comments you have.

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(Please put “Educator Feedback” in the subject line)

Educator Resources:

Visit the updated *Natural Inquirer* Web site at <http://www.naturalinquirer.org>. From this site, you can read and download lesson plans, word games, and other resources to help you use the *Natural Inquirer* in your classroom. You can also view and download a yearlong lesson plan aimed at helping your students learn about the scientific process.

Visit the *Natural Inquirer* Web site at <http://www.naturalinquirer.org>.

Lesson Plan for Ecosystem Services Edition

Materials and Supplies:

- *Natural Inquirer* Ecosystem Services Edition
- Copies of graphic organizer

National Science Education Standards Addressed: Content Standards A, C, F

- A. Abilities Necessary To Do Scientific Thinking
- A. Understanding About Scientific Inquiry
- C. Structure and Function in Living Systems
- C. Regulation and Behavior
- C. Populations and Ecosystems
- G. Science as a Human Endeavor
- G. Nature of Science

Time Needed: Two class periods

Class Period 1:

1. Pass out the Ecosystem Services Edition of the *Natural Inquirer*. As a class, read the “Welcome to the Ecosystem Services Edition” and preview the table of contents.
2. Divide students into four groups and assign each group one article. (If you prefer smaller groups, divide students into eight groups and two groups will be assigned to one article.)
3. Tell students that they are responsible for reading their article and completing the graphic organizer. Each person in the group is responsible for completing the graphic organizer. These graphic organizers will be used to present the article to the class the following class period.
4. Before students begin their assignment also share with them the rubric you will use to grade their work. Make sure students are clear about your expectations before they begin their work.
5. Give students the remainder of the class to read the article and fill out the graphic organizer.

Class Period 2:

1. Ask students to get out their graphic organizers and get into their groups. Allow the students 10 minutes to review what they did yesterday within their groups and prepare to speak to the rest of the class.
2. Once students are prepared, have groups share what they learned from their article.
3. After students have finished sharing about their articles, ask students to go back to their groups and reread the “Welcome to the Ecosystem Services Edition.” While reading this section, ask students to think about how their article fits into the topic of ecosystem services.
4. On a piece of paper, students should briefly answer this question: Why was my article chosen for the Ecosystem Services Edition?
5. Once all students have had a chance to answer this question, come together as a class and discuss how the articles fit into the topic of ecosystem services.

