Discovering Alabama

Teacher's Guide

Alabama Soils

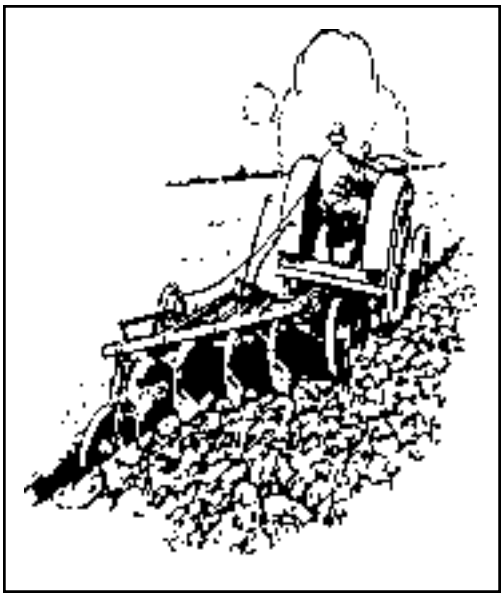
Suggested Curriculum Areas
- Science
- Social Studies
- Geography

Suggested Grade Levels
- K–12

Key Concepts
- Soil Horizon
- Soil Groups
- Soil Systems

Key Skills
- Observation
- Map Reading
- Classification

Synopsis



This video takes viewers on a journey across Alabama, from the northern counties to the coastal area, to highlight the great variety of soils found within the state. Along the way, visits with soil scientists and soil conservationists provide explanations of the process of soil formation, the complexity of soil biology, and the many ways that healthy soil is important to society.

A primary theme of the video is that healthy soil is a living system that provides essential biological processes fundamental to the existence of most creatures, including humankind. The video also highlights the history of changing soil conservation practices in Alabama and notes examples of modern-day soil conservation issues.

Discovering Alabama is a production of the Alabama Museum of Natural History in cooperation with Alabama Public Television. For a complete list of titles in the *Discovering Alabama* series, as well as for information about ordering videos and accompanying Teacher's Guides, contact us at either: *Discovering Alabama*, Box 870340, Tuscaloosa AL 35487–0340; phone: 205–348–2036; fax: 205–348–4219; or email: orders@discoveringalabama.org. Also visit our website: www.discoveringalabama.org.

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Before Viewing

1. Locate a wooded area with plenty of rich topsoil covered by an ample layer of humus (decayed leaves, plants, and other organic matter). Place students in small groups and assign each group to a separate area roughly one yard square. Have the groups spend about 15 minutes gently probing their respective areas of soil to a depth of five or six inches, while listing and describing as many signs of life (ants, spiders, worms, mites, eggs, fungi, etc.) as they can find.

2. Have the groups replace/restore the soil and humus at their respective sites, then gather everyone to one spot and let each group read/report its list of life found in the soil. (Typically, their lists will include dozens of creatures. To ensure such an outcome, you might wish to seek the assistance of a local forester or soil specialist.) Discuss the fact that healthy soil is far more than simply "dirt."

3. Introduce the video by explaining that Alabama contains a great variety of soils and that, in presenting this variety, the video might show local areas or other places that are familiar to students.

While Viewing

Have students note the names of the major Alabama soil categories and where in the state each category/group is found, see the back page of this Guide.

Video Mystery Question: When visiting the "black belt" region of Alabama, people are likely to encounter land areas that are white in color. Why is this?

(**Answer:** Portions of the "black belt," or Blackland Prairie region, include outcroppings of a geological feature known as "Selma chalk," an extensive layer of sediments containing the white-colored, fossilized remains of tiny marine creatures from ancient seas.)

After Viewing

1. Again place students into small groups and ask each group to: a) discuss what new information they learned from the video and b) develop a list of all the ways that soils are important. You might wish to add a touch of challenge to this assignment by offering a prize to the group that produces the best/longest list.

2. Use a microscope to examine samples of organically rich soil. Note observations that may relate to the video.

Extensions

1. Take the class to visit a roadway cut, construction site, or other locale that reveals distinctive layers of soil profile. Collect enough material from each layer for classroom use in creating a miniature version of this profile (using a jar or other clear vessel).

2. Invite a soil specialist to visit the class and discuss local soil variety/conditions.

Philosophical Reflections

In the book *Soil & Civilization*, Edward Hyams contends that man is but one member of a larger community of life tied fundamentally to the soil. In fact, Hyams refers to this living community as the "soil community." In other words, according to Hyams, a diversity of creatures emanate from the soil, draw upon the soil for sustenance, and depend upon the living system of soil for the organic processes essential to perpetuating life.

From a scientific perspective, Hyams's proposed "soil community" is, of course, quite akin to established facts of biology. But Hyams is speaking from a perspective other than contemporary science. His overarching premise is that the boundaries of knowable truth extend beyond the realm of intellectual scientific study. He maintains that we can fully comprehend our relationship to soil only through the intuitive knowledge that comes from living in close contact with the soil.

Indeed, Hyams concludes that the historical decline of numerous great civilizations is linked with their changing relationships to soil. He postulates that as these civilizations pursued technical advance, their intuitively-based rituals and beliefs were gradually forgotten, leading ultimately to cultural decline. In Hyams's words, "This major social disaster does not occur until there exist men isolated, by the advance of science and technics, and by the elaboration of social economy, from direct contact through hands and eyes and feet and noses, as well as minds, with the life of the soil community" (p. 15).

Perhaps ironically, modern science lends support to Hyams's views through scientific verification that many nations of the past met with demise as their soils were depleted. A key implication here, as Hyams suggests, is that soil is the host organism for many other forms of life, that humans are, in effect, parasitic to the soil. As such, we can learn to live in compatible partnership with the soil, or we can choose to overlook its fundamental role in our lives.

What do you think of Hyams's views about soil? Do you think it more accurate to refer to soil as a "natural resource" or as a "living system"?

Nature in Art

The different soil areas across Alabama include clays and other materials that have long been useful in painting, dyeing, and pottery-making. In fact, recent years have seen renewed interest in such uses. For example, there are now a number of Alabama businesses that specialize in clothing dyed with natural colors derived from soils.

Community Connections

1. Obtain a soil map of your county (these are available from local agriculture, forestry, and other natural resource agencies; see Additional References and Resources). Have students investigate the variety of soils and the locations of each in your county. Identify the soil types that are prevalent in the vicinity of your school.

2. Arrange for the class to participate in a soil conservation project. This might involve tree planting, constructing erosion barriers, or other soil protection measures. Again, assistance can be obtained from local agriculture, forestry, or other natural resource agencies. Contact the local media and invite them to publicize student involvement in the project.

Complementary Aids and Activities

Conserving Soil. U.S. Department of Agriculture (USDA), Soil Conservation Service—now the Natural Resources Conservation Service (NRCS). This package provides a complete lesson on soil composition and basic management. Use the four-color transparencies, 24 reproducible activity masters, and 20-page guidebook to teach children about this vital resource. To order: contact the National Association of Conservation Districts by calling (800) 825–5547, ext. 32; or visit the website at: *www.nacdnet.org/education/products.html*. Copies are $7.00 each and discounts are available for quantity orders.

Soils of Alabama Poster. Legacy, Partners in Environmental Education; Legacy, Inc., P.O. Box 3813, Montgomery AL 35109. Call (800) 240–5115; fax (334) 270–5527. Email: info@legacyenved.com. The poster depicts the diversity in the Alabama terrain by showing the various types of soils found in the state. The poster is broken out into five physiographic provinces: Interior Low Plateaus Province, Appalachian Plateaus Province, Valley and Ridge Province, Piedmont Province, and the Coastal Plain Province.

Dig In! Hands-On Soil Investigations. National Science Teachers Association and NRCS publication. To order, call: (800) 277–5300. This lively 129-page book assists educators in teaching scientifically accurate soil and soil conservation information in an enjoyable way.

Additional References and Resources

Hyams, Edward. *Soil & Civilization*. Harper Colophon Books, 1976.

From the Surface Down. USDA, NRCS. This publication is out-of-print, but it is available online: *www.statlab.iastate.edu/soils/nssc/nsscprod/surdown.pdf*

Teaching Soil and Water Conservation—A Field Guide. USDA, NRCS. This publication is out-of-print, but a photocopy can be obtained from USDA, NRCS, Auburn AL, (800) 342–9893.

Soil Biology Primer is an introduction to the living component of soil and how it contributes to agricultural productivity, as well as air and water quality. Single copies cost $6.00 plus shipping and handling. Discounts are available for orders of ten or more. To order: see the Soil and Water Conservation Society (SWCS) website at *www.swcs.org* (click on Publications, then Books); call: (800)THE–SOIL, ext. 10; or email: *pubs@swcs.org*

Soil Quality Information Sheets. USDA, NRCS, Soil Quality Institute. See: *www.statlab.iastate.edu/survey/SQI/sqiinfo.html*

A Handful of Dirt by Raymond Bial. Colorful photographs and meaningful text present the nature and importance of soil and the many forms of life it supports.

Parting Thoughts

Experts tell us that, worldwide, productive soils are being lost at a dramatic rate. Part of this loss is due to climatic changes and related phenomena such as desertification, whereby normally vegetated landscapes gradually become barren deserts. But a substantial amount of productive soil is lost to human impacts.

Chief among human activities affecting soils are current trends of sprawling growth and development. Annually in the U.S., we pave an area larger than the state of Rhode Island. Each year, millions of acres of prime farmland are converted to housing subdivisions, shopping malls, airports, industrial parks, etc. In Alabama, such land conversion is affecting the fertile valleys near Huntsville, the rich prairie land adjoining Montgomery, and the prized coastal farmlands of Baldwin County.

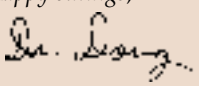
Of course, human society must, of necessity, develop portions of the landscape. However, a troublesome reality of the modern age is the fact that land development often occurs without regard for the natural values of the affected lands, and without an appreciation for the remarkable life-sustaining powers of soil.

What can we do about this problem in Alabama? How can we increase public understanding for the significance of our soils?

Part of the answer is greater environmental education—for the general public, for school children, and for landowners. Another part of the answer is improved land-use planning—for our communities, for our counties, and for the entire state. An additional part of the answer is to persuade local and state leaders to place a top priority on conservation and environmental protection in Alabama. In each of these three areas much needs to be done.

Oh yeah, I almost forgot. A leading reason for continued soil losses in many Alabama communities is the fact that city councils and county commissions are often dominated by commercial real estate and development interests. Therefore, a frontline defense to help conserve environmental values in your community is to change the makeup of these local governing bodies to include meaningful representation for conservation.

Happy outings,

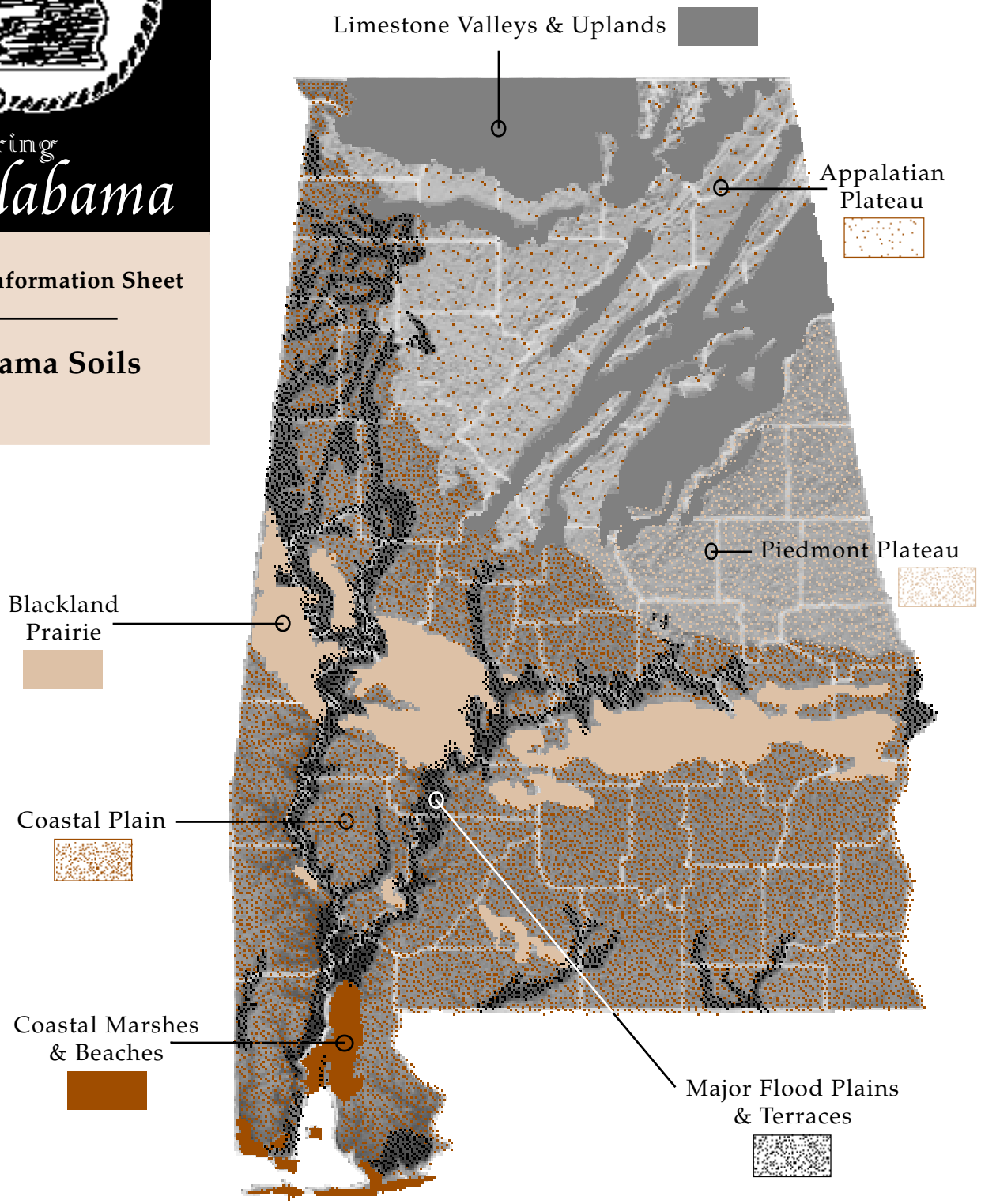


Discovering Alabama

Activity/Information Sheet

Alabama Soils

Seven Major Soil Areas in Alabama



The mission of the United States Department of Agriculture's Natural Resources Conservation Service (NRCS) is "to provide leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment." For more information about the NRCS in Alabama, visit: *www.al.nrcs.usda.gov/* or write: P.O. Box 311, Auburn AL 36830.