



Discovering Alabama

Teacher's Guide

Alabama Fossils

Suggested Curriculum Areas

Natural History
Earth Science
Environmental Studies
Geography
Paleontology

Suggested Grade Levels

4 – 12

Key Concepts

Geological Time
Geological Change
Prehistoric Life
Scientific Inquiry

Key Skills

AL Geologic Appreciation
Geologic Timelines
Research
Inquiry

Synopsis

Alabama's geological history is rich and diverse. Fossils provide evidence of ancient life over the vast span of geological time. This video explores Alabama's rich fossil heritage to examine the questions: Did dinosaurs live in Alabama? What did life look like in Alabama's early history? How has Alabama changed over time? What is a fossil? What do fossils tell us about Alabama's past? Host Dr. Doug Phillips takes us back in time to reflect upon Alabama's geological and paleontological past to discover ancient life and "Lost Worlds" that continue to intrigue inquiring minds as the wonders of Alabama are explored.



Discovering Alabama is a production of the **Alabama Museum of Natural History** in cooperation with **Alabama Public Television** and **The University of Alabama College of Continuing Studies**. For a complete list of titles in the *Discovering Alabama* series, as well as information about ordering videos and accompanying Teacher's Guides, contact us at either: *Discovering Alabama*, Box 870340, Tuscaloosa AL 35487-0340; phone: 205-348-2039; fax: 205-348-4219; or email: orders@discoveringalabama.org. Also visit our website: www.discoveringalabama.org.

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Before Viewing

- 1 Place students in small groups. Ask students, Who likes to explore and collect rocks, fossils, and relics from the past? Let them share their enthusiastic stories in a small group setting.
- 2 Ask students: What do you think Alabama was like many millions of years in the past? What kinds of creatures lived where we live today? What do you think the surface of Alabama was like? The climate? Have them create a brief written description (to include drawings if they wish).
- 3 Have each group report their descriptions to the class. Compare the groups' ideas, and discuss how each arrived at their respective conclusions. Introduce the video by explaining that it features an overview of Alabama's rich fossil heritage and highlights some of Alabama's early forms of plant and animal life across geological time.

While Viewing

Have students note the following:

- 1 The main geological eras in Alabama when and where various ancient life forms lived.
- 2 How the science of paleontology can help us understand our world.
- 3 Ways that life and landscapes have changed in past eras compared to today.

Video Mystery Question:

What is Alabama's State Fossil? (Answer: It is the *Basilosaurus cetoides*, an ancient whale that lived in sea waters that covered much of lower Alabama more than 30 million years ago.)

After Viewing

- 1 Return students to their small groups to discuss and develop a list of what they learned from the video.
- 2 Have the groups share their lists with the class and discuss. Have them work to identify any remaining questions they are curious about related to Alabama's geological and paleontological history.

Extensions

- 1 View other *Discovering Alabama* programs featuring additional information on Alabama's geological past. These include "Geological History of Alabama," "Tracks across Time," and "Alabama Black Belt I."
- 2 Assign student groups to conduct research for answers to questions they have identified; Have them report findings to the class.
- 3 Visit the Alabama Museum of Natural History at The University of Alabama and subscribe to "Museums from Your Home - Family Friday" to access live and recorded resources such as "Archaeology vs. Paleontology Recap" (<https://www.youtube.com/watch?v=ZS1MF9a9LIQ>) and "What is Paleontology?" (<https://www.youtube.com/watch?v=SiqiRqtQJAo>).
- 4 Consider joining one of Alabama's two amateur paleontology groups, the Alabama Paleontological Society and the Birmingham Paleontological Society; see **Additional References & Resources**.

Philosophical Reflections

Our world is ever changing. Life forms lost to geologic time are preserved in nature to show us a world very different from our own—a changing world many species could not adapt to. Their stories and lives embedded in ancient rock provide paleontological evidence compelling us to recognize the possibility that our own species might be a relatively short lived form of life on Planet Earth. In this paleontological context, what role do you feel science can play in helping us confirm the validity of beliefs we hold today about the meaning and purpose of life? What might we conclude about potential threats to human existence from such phenomena as "climate change" and the global decline in natural habitats and biodiversity? Do prevailing human beliefs include a moral obligation of responsibility to be caring stewards to protect the natural environment? Based on what assumptions? Or do human beings have no such moral obligation? Based on what assumptions?

Previewing *Discovering Alabama* programs and Teacher Guides can be helpful for discussions here. Examples include "Geological History," "Night Hike," "Alabama in Space," and "Tracks across Time."

Nature in Art

Show the class several fossils and let them make rubbings of various fossils or copy fossil drawings. Point out aspects of physical structure and symmetrical design that can be seen in many fossils. Or, get wild, have students draw their own versions of living creatures they imagine could have existed eons ago.

Community Connections

Alabama's rich geological history is preserved and showcased with an array of fossil and geological exhibits and collections that can be seen at the many science centers and natural history museums across the state. Visit your local museum or connect with your local rock, mineral, or paleontology group to learn about their collections. Students can also attend virtual fossil/geology/paleontology tours at the Smithsonian Museum of Natural History: <https://naturalhistory.si.edu/visit/virtual-tour>.

Additional References & Resources

- Alabama Museum of Natural History: <https://almnh.museums.ua.edu/>
- USGS Paleontology Collections of Alabama: <https://www.sciencebase.gov/catalog/item/58d0530ce4b0236b68f535bc>
- McWane Science Center Collection: <https://www.mcwane.org/collection/>
- McWane Science Center, Alabama Biodiversity Database: <http://luna.mcwane.org/luna/servlet>
- Learning Series: Fossils and Geology of the Southeastern United States: Alabama—Cenozoic and Mesozoic Eras: <http://www.wiregrassrockhounds.com/Feb%202014%20LS.pdf>
- GSA Geologic Time Scale v 5.0: <https://www.geosociety.org/documents/gsa/timescale/timescl.pdf>

- Geological Survey of Alabama—Interactive Geology Mapping: <https://www.gsa.state.al.us/gsa/geologic/mapping>

- *Lost Worlds in Alabama Rocks—A Guide to the State's Ancient Life and Landscapes* by Dr. Jim Lacefield, available for order from the Geological Survey of Alabama. The Geological Survey of Alabama, in partnership with Dr. Lacefield and the Alabama Museum of Natural History, is offering a free copy of Dr. Lacefield's book to schools and educators in Alabama while supplies last. See <https://www.gsa.state.al.us/img/InterAgency/Lacefield.pdf> for contact information.

- Join the Alabama Paleontological Society: <https://www.alabamapaleosoc.org/> and the Birmingham Paleontological Society: 200 19th St. N, Birmingham, AL 35203; (205) 933-4153.

- Learn more about Alabama's State Fossil, *Basilosaurus cetoides*: https://archives.alabama.gov/emblems/st_fossil.html and <http://encyclopediaofalabama.org/article/h-1386>.

- Subscribe to "UA Museums," a YouTube channel: <https://www.youtube.com/uamuseums>.

Parting Thoughts

This 30-minute program, "Alabama Fossils," is able to tell only a small part of the story of Alabama's geological and paleontological past. Other Discovering Alabama programs, for example, "Alabama's Geological History" and "Tracks across Time," provide helpful additions to the story. These programs draw upon science, particularly the scientific study of earth's history, revealing eons of time over many millions of years prior to human existence and tracing how countless forms of ancient life developed and changed in response to changing geology, climate, and other natural conditions on earth. Not surprisingly, every time one of the Discovering Alabama programs is broadcast across the state, I receive a number of viewer reactions expressing their disagreement with science in such matters. So for those who maybe don't accept the scientific account of earth's history, for

those whose religious beliefs maybe embrace a very different account of time and history, well, let me say, I understand. The Creation is so amazing to behold. The marvels, the intricacies, and, yes, the designs that we can readily see do give we humans a sense that such wonders would reflect a higher order and a grand purpose that is perhaps beyond the limitations of present scientific understanding. Still, I think all of us, regardless of chosen religious belief, tend to agree with the premise that certain things in our world are factual in a scientifically, physically measurable way that cannot be denied by rational people, even if religious belief might suggest otherwise. Thus we should accept that the measurable eons evidenced by geological layers of the earth, and the measurable changes in life forms over time, are physical factual realities to be recognized by rational people. Nevertheless, I would suggest that the timeless human quest for ultimate purpose, and the innate human need for essential meaning in life, are also important realities to be recognized by rational people, and are to be accepted with sensitive consideration, even within those fields of science that reveal to us a geological and paleontological past about which many human ideas of meaning and purpose are seemingly irrelevant.

*Oh yeah, I almost forgot. The book *Lost Worlds in Alabama Rocks* (by Dr. Jim Lacefield, 2nd edition, 2018) was published by the Alabama Museum of Natural History, The University of Alabama. Complimentary copies are available for teachers, on a limited basis, by contacting the Alabama Museum of Natural History (<https://almnh.museums.ua.edu/publications/>; mailing address: Box 870340, Tuscaloosa, AL 35487). Also, the Alabama Museum of Natural History annually recognizes the importance of amateur paleontology by selecting a winner for the Alabama Avocational Paleontologist Award, given each year in October during the National Fossil Day celebration at the Museum on campus at The University of Alabama (<https://collections.museums.ua.edu/alapatward/>).*

Happy outings,

Dr. Doug





Discovering
Alabama

Activity/Information Sheet

Alabama Fossils

Meet Alabama's State Fossil: *Basilosaurus cetoides*

Basilosaurus cetoides is an early archaeoceti, an ancient toothed whale, that lived 34 to 40 million years ago in Alabama's coastal waters during the Eocene period. Alabama's Eocene coastline was very different than today's coastline, encompassing areas of Clarke, Washington, and Choctaw counties of today. *Basilosaurus* was 50 to 60 feet long, had differently shaped teeth and vestigial hind limbs. Alabama designated *Basilosaurus* as the official State Fossil in 1984.

A full-scale replica of *Basilosaurus cetoides* is the hallmark of Smith Hall at The University of Alabama's Museum of Natural History, which holds over 10,000 cataloged items in its Vertebrate Paleontology Collection. Visit today!

Source: <https://news.ua.edu/2017/02/museums-collections-spotlight-basilosaurus-cetoides/>



Photo: Strategic Communications, The University of Alabama