



# TRACKS FROM

THE STEVEN C. MINKIN PALEOZOIC TRACKWAY  
SITE IS AN IMPORTANT DISCOVERY FOR SCIENTISTS

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Who hasn't run across the tracks of a deer or another critter in the soft mud along a creek bottom or in the furrowed soil of a plowed field? When you look at the tracks of an animal, you are looking at a record of its activities, the closest thing that nature gives us to a video of an animal's movements. It doesn't take a lot of imagination to picture the animal moving along the bank carrying on with its daily activities, and if you study tracks closely, you can learn a lot about the animal that made them — its size, its manner of walking, sometimes even behavioral features such as movement in groups or evidence of predation.



*This fossil of an insect wing, approximately 3 inches long, was found in the summer of 2005.*

# FROM THE PAST



*The Alabama site has been designated by authorities in the field of paleontology as the most important Carboniferous track site in the world. It draws professionals from far and wide to study its treasures. Here Professor Hartmut Haubold, a paleontologist from Germany, examines a fossil.*

In June 2004 the Alabama State Lands Division acquired an unusual piece of the state's history, a geological site littered with the tracks of animals from an ancient coal swamp. Now designated the Steven C. Minkin Paleozoic Trackway Site, the property is the product of an unprecedented collaborative effort between a group of amateur fossil enthusiasts, the Alabama Paleontological Society (APS), and professional paleontologists from the Geological Survey of Alabama and elsewhere across the world. These ancient impressions are giving scientists a unique glimpse into Alabama's distant past, adding to knowledge about the types of animals that lived here during the Coal Age as well as their behavior and environment.

## **Important Discovery**

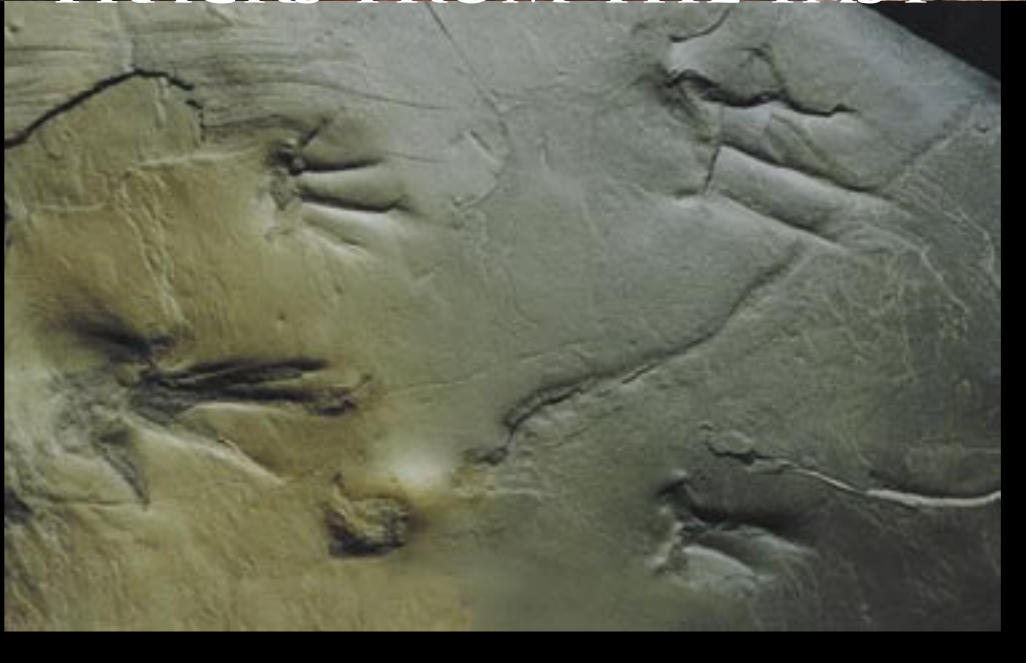
It all started in late 1999 when Oneonta science teacher Ashley Allen went on a trip to scout for fossils in a surface coal mine belonging to the grandmother of one of his students, Jessie Burton. Jessie had suggested

that the Union Chapel Mine, located south of Jasper, would be a good site to find fossils and had gotten his grandmother's permission for them to visit it. Ashley was always on the lookout for good fossil sites for field trips for his science class and the group of amateur fossil collectors to which he belonged. After a few minutes surveying the piles of shale left from the mining operation, Ashley made a startling discovery. The quality of the shale at the site was unusually good — the slabs had evidently been formed when very slow moving waters deposited extremely fine-grained particles that preserved in exquisite detail the tracks of animals that had been moving about on mud flats within the ancient coal swamp. On this first visit he found several spectacular trackways of ancient amphibians and crab-like invertebrates, records of the activities of animals from a long-forgotten era of Alabama's past, the Coal Age.

Ashley soon communicated his discovery to the other members of the little group of amateur paleontologists for whom he acted as field trip coordinator. Within

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# TRACKS FROM THE PAST



*Trackway from *Attenosaurus subulensis*, a large alligator-sized anthracosaur amphibian, showing the large hindfeet and small forefeet.*

weeks, with the owner's permission, the group made the first of many trips out to the site and began recovering slabs containing a myriad of different sizes and shapes of animal tracks as well as an astounding variety of plant fossils. While not unknown in coal mines within the state, the sheer number and diversity of the footprints began to impress the group with the idea that some sort of organized record needed to be made of the rapidly expanding collection of tracks that the amateurs had collected. The tracks had been laid down in rocks some 310 million years old, about 80 million years before the earliest dinosaurs.

Recent decades have been highlighted by the discovery of millions of dinosaur tracks in the western U.S. and across the world. These tracks have taught us much about the animals that made them — for example, that the giant sauropod dinosaurs moved in herds. The Alabama trackways were arguably even more important because in many cases the skeletons of these much earlier trackmakers have yet to be found. It turned out that these trace fossils, records of the activities of long extinct animals in the coal swamps, represented in many cases the only known traces of their existence, pages from a lost book of early life preserved in thin layers of shale. Some of the details of this ancient period of the state's history can be found in a superbly written and illustrated book entitled *Lost Worlds in Alabama Rocks: a Guide to the State's Ancient Life and Landscapes* by APS member Dr. Jim Lace-

field, currently about to be published in its second edition.

During the Coal Age, known to geologists as the Carboniferous Era, Alabama was located slightly south of the equator, and the area where the coal fields of Walker County are located lay in a vast tropical swamp with slowly meandering rivers depositing sediments eroded from the Appalachian Mountains on their way to an inland sea to the west. The plants during that early period were primitive relatives of modern ferns, horsetails, and club-mosses, some of which grew to massive size. Gigantic insects flitted among the foliage, and amphibians and early reptiles crawled through the lush vegetation or lurked in the winding waterways. Skeletal remains of vertebrate animals from this early period are scarce, and particularly enigmatic are those from a giant alligator-like animal nicknamed "Frogzilla" by APS members.

## **State Acquires the Site**

The group contacted geologists from the Alabama Geological Survey in Tuscaloosa as well as paleontologists from Emory and the University of Florida and began, largely under the organizational skills of Steve Minkin, a geologist who was a member of the group, to create a photographic index of all the specimens collected to date. The collectors assembled in three separate meetings, jokingly called "Track Meets" by the members, to catalog and photograph

the specimens with the assistance of the professional paleontologists and geologists who had become involved in the project. The majority of the photos were taken by APS member Dr. Ron Buta, a professor of astronomy at the University of Alabama, who also posted the photos on a website (they can be viewed at <http://bama.ua.edu/~rbuta/monograph>). Ron also began to document a rough history of different events and publications related to these early activities at the Union Chapel Mine. The instant availability of all these images via the Internet to distant scientists, governmental officials, and media representatives turned out to be a key advantage when the decision was made the next summer to press for permanent protection for the site.

By the summer of 2001 the number and diversity of tracks accumulated from the site had made it, in the estimate of authorities in the field, the most important Carboniferous track site in the world. That assessment spurred the members of the group to undertake a daunting effort to preserve the site from federally mandated reclamation as set forth in the Surface Mining Control and Reclamation Act of 1977 (USC Title 30, Chapter 25). When Congress enacted the law, no one could have foreseen that one day one of these mines might be found to contain a treasure trove of scientifically valuable fossils. Over the course of the next three years, the group organized a campaign with numerous letters and visits to the offices of governmental officials including the Alabama Surface Mining Commissioner in Jasper, the Walker County Commission, and District Four Congressman Robert Aderholt, who even made a personal visit to the site in July 2002.



Many newspaper articles, including four in the Jasper *Daily Mountain Eagle*, two in *USA Today* and two in the prestigious journal *Science*, highlighted the preservation effort. The group won the support of local conservation organizations including the CaWaCo Resource Conservation and Development Council and the Black Warrior/Cahaba Land Trust. They received letters of support from prominent paleontologists, including top trackway experts Dr. Spencer Lucas, New Mexico State Paleontologist, and Professor Hartmut Haubold from Halle, Germany (who even traveled to Alabama and spent two weeks in February 2003 viewing and photographing the tracks) and the 5,000-member Society for Vertebrate Paleontology. Professor Haubold's opinion of the site's importance is worth reproducing here: "My assessment: by quantity, by quality, and by geologic age, it is the most important discovery of Carboniferous tracks hitherto known."

In June 2003 the site was visited by Dr. Randy Johnson, the Alabama Surface Mining Commissioner, Dr. Nick Tew, the newly appointed State Geologist and head of the Geological Survey of Alabama, and Jim Griggs, director of the State Lands Division of the Alabama Department of Conservation. Officials from the company that owned the mine and members of the Alabama Paleontology Society were also present. It was a sunny morning and the group walked around the site finding several nice sets of tracks during the excursion. Afterwards, they met to discuss the possibility of preserving it and the steps that would have to be accomplished. The APS had come to realize that an essential component of the preservation effort had

to be some governmental agency that could accept it in perpetuity. Although the U.S. Department of the Interior had been considered, the most logical agency was the Alabama State Department of Conservation, and so it was fortunate that Jim Griggs had been impressed by what he had seen at the site as well as by the huge collection of fossils that the site had already yielded and the strong letters of support from the professional community.

In June 2004 State Lands concluded an agreement to acquire the property with the owner and the Surface Mining Commission. Finally, on March 12, 2005 the Union Chapel Mine site was formally dedicated as the Steven C. Minkin Trackway Fossil Site in honor of APS member geologist Steve Minkin, an enthusiastic supporter of the preservation campaign who had unfortunately died a few months earlier following a tragic accident in his home.

### **Fossil Site Future**

Now that the Minkin fossil site has been preserved for posterity, what sorts of activities are currently taking place there, and what plans are being made for future development? The APS, with the help of the McWane Science Center and the Alabama Geological Society has just published a lengthy monograph on the site containing an atlas of plant fossils and tracks from the site together with a collection of articles. The articles range, appropriately enough, from discussions of the amateur-professional collaboration leading to the successful preservation of the site written by amateur contributors to highly detailed chapters on the geology, fossil tracks, and fossil plants at the site written by the

*The Union Chapel Mine site was renamed for the late Steven C. Minkin in recognition of his contribution to understanding Alabama's paleontology and natural history. Minkin, who passed away in 2004, was a geologist and member of the Alabama Paleontological Society. He played an instrumental role in the recognition of the significance of this unusual resource.*



*Exceptionally well-defined surface tracks from a primitive salamander-like amphibian, a temnospondyl amphibian called *Matthewichnus caudifer*, include the mark from the tail dragging on the surface.*

professional paleontologists involved in the project (to order your own copy refer to the APS website: [www.alabamapaleo.org](http://www.alabamapaleo.org)). Although the site is closed to the public for general collecting, the APS has recently concluded an agreement with State Lands to continue recovery and cataloging tracks from the site for museum collections. APS members will also serve as guides for educational trips for groups of visiting geologists, teachers and students. Hundreds of fossil specimens from the Minkin site now reside in the collections of the Alabama Museum of Natural History in Tuscaloosa, the McWane Science Center in Birmingham, the Anniston Museum of Natural History, and the New Mexico Museum of Natural History in Albuquerque. A representative collection of tracks from the site will soon be added to the collection of the Smithsonian Institution's Museum of Natural History in Washington, D.C., where it may eventually be placed on exhibit for people from everywhere to enjoy.

The photographic index now contains about 3,000 images, including wing impressions from three different species of large insects and a fossil spider. Plans are being made to acquire funds for construction of a visitor's center for visiting educational groups and to undertake a controlled excavation of the ancient mudflats that extend beneath the highwall, a project which could significantly add to current knowledge about the Carboniferous world. There have also been discussions about creating a traveling exhibit with plant fossils and tracks from the site that could visit Alabama schools as well as those in neighboring states. ☼



KEITH GAULDIN