



Friends of the Florissant Fossil Beds Newsletter

Volume 2007 Issue 2

September, 2007

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Friends Celebrate 20th Anniversary

by *Sally McCracken Maertens*,
Vice-President

On Saturday, August 18, 2007, over 75 members of the Friends of the Fossil Beds, Inc. visited Florissant Fossil Beds National Monument for a variety of activities celebrating the 20th Anniversary of the Friends. It was a beautiful day weather-wise with just a few sprinkles before dinner that dampened no one's spirit.

The festivities began at 11:00 a.m. in the amphitheater with greetings from Park Superintendent Keith Payne and Friends President Steven W. Veatch. A special announcement was made that a grant for \$30,000 had just been received to be used for 10 more wayside exhibits along the Petrified Forest Loop. Jean Rodeck, former Superintendent, had given \$44,000 toward

matching funds for the grant from the NPS Challenge Cost Share program. The Friends also gave \$1000.00 toward the grant. Rodeck, who was at the opening session was deeply touched by the announcement.

Dr. Herb Meyer, Park Paleontologist, also spoke, thanking the Friends for their continued support for paleontology research and activities. The Friends fund one paleontology intern each year. In addition to, we provide financial support for other paleontology activities and are the only Friends group that supports a fossil park. We thank Dr.

Meyer for all of his help each year with the summer seminars, including serving as instructor of record for Adams State College.

Throughout the day, both Friends and the public were invited to attend several special programs. Jeff Wolin, Ron Haberkorn, and Melissa Barton



Photo by Sally and Hank Maertens

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Letter from the Superintendent

by *Keith Payne*, *Superintendent*,
FFBNM

Congratulations to the Friends of the Florissant Fossil Beds on their 20th Anniversary! The staff at the Fossil Beds has appreciated your enthusiastic support for these many years and we wish to extend our sincere gratitude to you all. Thank you.

There are so many projects and

tasks to be done at the Fossil Beds that we could not accomplish without support from friends like you. Since not all of you were able to attend the 20th Anniversary celebration in August, I would like to recap some of the recent projects and give you an insight into what is on tap for the future at the Monument.

The Visitor Center has been the

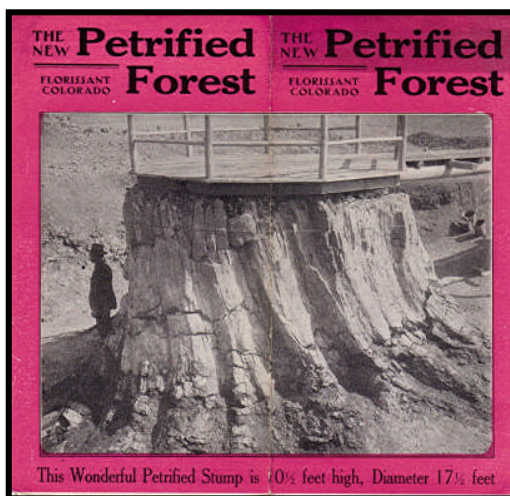
focus of several projects this past year. Even though we gained the approval recommendation from the NPS Development Advisory Board for the new visitor center project to move forward for construction in 2010, it is always uncertain whether circumstances will permit us to keep that schedule. Regardless of the new visitor center schedule, it is the

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Fagopsis longifolia: An Extinct Species from Florissant

by *Steven Wade Veatch*

Fagopsis longifolia is one of the more common fossil plants found in the Florissant Formation. Located 35 miles west of Colorado Springs, Florissant Fossil Beds National Monument has one of the most diverse fossil deposits in the world—more than 1,700 different species have been described from this ancient lake deposit. *Fagopsis*, a genus that became extinct at the end of the Eocene, is thought to have been a member of the beech family (Fagaceae). Originally identified as the water elm, *Planera*, these fossil leaves were assigned to *Fagopsis* by Manchester and Crane (1983). *Fagopsis* is known from just 30 other fossil specimens from the North American Eocene. Although *Fagopsis longifolia* is among the most abundant fossils at Florissant, this species has not been found anywhere else



This brochure, featuring one of the Sequoia stumps of the Florissant fossil beds, was used to attract visitors to the fossil beds when it was a tourist attraction. Huge, petrified Sequoia trees are the largest fossils found in the monument—some have the largest diameter petrified trees known. *Brochure image courtesy of the Beth Simmons collection.*

in the world (MacGinitie, 1953). *Fagopsis* thrived along the prehistoric Florissant streams and the edges of ancient Lake Florissant, dropping its abundant leaves onto the water. Towering redwoods (*Sequoia*) also grew around the borders of the lake and along streams.

The leaf shape of *Fagopsis longifolia* is ovate, with straight, secondary veins. The leaf margin is dentate with large prominent teeth. The apex (top) of the leaf is acute and the base is slightly rounded. Fossil plants, just like *Fagopsis longifolia*, provide important information about paleoclimate and the uplift history (paleoelevation) of the Rocky Mountains in the prehistoric past. *Fagopsis* represents plants found in a moister climate than the cool, dry climate of Florissant today.

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1895—A Petrified Big Tree

The Youth's Companion, Dec. 19, 1895, #3578, APS Online p. 651

A PETRIFIED BIG TREE.

Its Discovery in Colorado. – How it came there.

by *Professor Arthur Lakes*

Most of the readers of *The Companion* have heard much of the "big trees" of California, the *Sequoia gigantea*. Many, no doubt, have stood in awe before these giants of creation on the Pacific coast. Last summer, in a little meadow-park called Florissant, nine thousand feet above the sea and in the heart of the Colorado range of mountains in the state of Colorado, we came across half a dozen stumps of these trees from ten to fifteen feet in diameter, turned into solid, hard stone.

One of the largest of these stumps had been partially excavated from its bed by some enterprising people, who had intended to carry it to the World's Fair at Chicago.

It stood about twenty feet above its base, and was fifteen feet in diameter. As it was too huge and heavy to transport bodily, they tried to saw it up into sections; but fortunately for Colorado, its flinty hardness was more than a match for thin stone-saws of soft iron, which are still sticking in the tree as monuments of their discomfiture.

So wonderfully has the stony material replaced the texture and grain of the original tree, and even in some parts simulated its

color, that but for its unusual size any one might have passed it by as an old dead pine stump, felled by some early settler.

It was easily recognized as a fossil representative of redwood. Not only is the rough texture of portions of the thick bark preserved, but even the minutest wood-cells and rings of yearly growth are retained. Sometimes a faint tinge of iron-rust nearly restores portions of the wood to its redwood color; but the prevailing that is an ashen-gray, like that of an old dead stump.

As you pick up one of the chips scattered around by the hammers of tourists, its weight and hardness alone convince you that it is really stone, and not an old cedar chip, left by the axe of an early wood-chopper. To complete the resemblance to certain parts of the living tree, sap-vessels and veins are here and there filled with what appears to be gum, but it is really semi-transparent agate, opal or chalcedony.

When we make fine, thin sections of the fossil wood, and put them under the microscope, we find a peculiar pattern of the wood cells which is the same as that of the modern sequoia, showing that these long trees, over a thousand miles from the Pacific coast, are the stony representatives of the great living sequoias.

How was this tree so wonderfully changed into stone, and how comes it here, almost alone in the Rockies? Stone it certainly is;

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Ashfalls and Algae and Altimetry, Oh My!

News From the Paleontology Division
by *Melissa Barton*,

In addition to beginning a comparison project with the nearby Antero Formation of South Park ("Exploring Another Ancient Lake," this issue), the paleontology division and visiting researchers also worked on several other projects this summer.

With the help of two summer paleontology interns, Eva Lyon (College of Wooster) and Kathy Salas (University of Texas—Austin), and science data management specialist Dr. Brent Frakes from the Rocky Mountain Inventory and Monitoring Program, the park completely overhauled the park's paleontological Inventory & Monitoring program, which keeps track of the condition of fossil sites throughout the park.

Kathy and Eva also worked on several other projects, including exhibit assembly, assisting visiting researchers in the field, writing new site bulletins, and inventorying the park's herbarium (modern plant collection). We are very grateful for their invaluable help this summer and wish them the best in their future endeavors, and we also thank the Friends of the Florissant Fossil Beds, Inc., and the Geological Society of America's GeoCorps America program for funding their internships.

University of Colorado doctoral candidate Mary Ellen Benson is continuing her research on Florissant diatoms (algae), and Uni-

versity of Colorado Museum professor Dr. Jaelyn Eberle and Museum and Field Studies graduate Karen Lloyd are continuing research comparing the Florissant fossil mammals with other North American mammal faunas.

The park also received new research requests, including one from Dr. Charles ver Straeten from the New York State Museum. Ver Straeten is a sedimentary geologist who is interested in how volcanic ash layers are preserved. He visited the park to collect some samples after visiting the early Eocene Green River Formation in Wyoming. Ver Straeten plans to begin a research collection of ash slides as a resource for researchers.

Before the Geological Society of America (GSA) Annual Meeting October 28-31 in Denver, park paleontologist Dr. Herb Meyer has been invited to present at a special short course, Paleoaltimetry: Geochemical and Thermodynamic Approaches, cosponsored by the Mineralogical Society of America and the Geochemical Society. The short course will cover different methods of estimating paleoelevation, such as leaf-margin analysis and stable isotope geochemistry.

At the conference, Friends president Steven W. Veatch will be presenting a paper entitled "The Friends of the Florissant Fossil Beds: facilitating collaborate efforts in informal geoscience edu-

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Exploring Another Ancient Lake

by *Melissa Barton*

This last summer while I was working at Florissant Fossil Beds National Monument, we began fieldwork for my Master's thesis in Museum and Field Studies at the University of Colorado. The Spring 2007 Friends newsletter included an article about our preliminary scouting expedition, "A Tale of Two Lakes," and you can also read more about the project at the Friends website: <http://www.fossilbeds.org/category/antero-formation/>

The Antero Formation is a lake shale deposit like Florissant, and it has been dated from sanidine crystals to 33.76 million years old, whereas Florissant has been dated to about 34.07 million years old. Geologically speaking, this is very close, and would place the Antero Formation just before or just after the Eocene-Oligocene transition, depending on the time scale used. This is important because the Earth's climate cooled fairly rapidly during this time, resulting in major changes to plant and animal communities. Comparing fossils from the two formations will provide more information about the effects of Eocene-Oligocene cooling in North America, as well as the local paleoecology of the region.



Paleontology intern Eva Lyon takes a GPS reading, while Dr. Herb Meyer and paleo intern Kathy Salas collect fossils. *Photo by: Melissa Barton*

After a great deal of planning and obtaining permits to work and collect in county road easements, Dr. Herb Meyer, our summer paleontology interns Kathy Salas and Eva Lyon, and I finally made it out to South Park to collect some fossils! The shale of the Antero Formation weathers quickly, so it was a slow and sometimes frustrating effort. We collected primarily mountain mahogany leaves, but also a few pine needles and small unidentified leaves that will merit future examination. While mountain mahogany fossils (usually of the seed spirals) are found in the Florissant Formation, they are not by any means prevalent.

We also collected some rocks for pollen samples. Since it is difficult to gain a concept of the true diversity of the Lake Antero flora from mountain mahogany alone, pollen will play an important role in reconstructing the ancient ecosystem. In addition, since all types of fossil records are biased in some way, collecting different types of plant fossils gives a more complete picture. For example, plants that grew further from the lake probably wouldn't have fossilized well as leaves, but their wind-borne pollen may be present. These pollen samples can be

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Friends 20th Anniversary Statement

Letter from Jerry and Kathy Brown

Jerry served on the early Board of the Friends, and is the son of Pat and Marv Brown, who have also served on the Board for years. Jerry was the Chairman of the first March for Parks event.

We regret being unable to attend but we would like to wish the Friends of the Florissant Fossil Beds congratulations on 20 years of supporting the

National Park Service in promoting the Monument's educational, conservation, and scientific research projects. How the years have flown by. It seems like yesterday huddling around Kent's refrigerator with Noel (Poe-Superintendent), all of us writing checks to kick this great organization off.

The Monument is a very special place to us of course as we first met there and our family ties run deep in the region. We know that through hard work and commitment (past, present, and future) of the Friends group, it has become and will continue to become and will continue to be a vibrant resource and educational center for generations to come.

We are honored to be a part of it. We miss you all. Thanks for all of your hard work.

Warmest regards,

Jerry and Kathy Brown

Richard Beidleman on T.D.A Cockerell

by *Melissa Barton*

This is the second year of the centennial of Cockerell's 1906-1908 collecting expeditions to Florissant on behalf of the University of Colorado Museum of Natural History and the American Museum of Natural History. Cockerell's collections at the University of Colorado Museum remain one of the most important collections of fossil insects from Florissant, and they are still being studied today.

Dr. Richard Beidleman is Professor Emeritus of Ecology at Colorado College. He is one of a few scientists today who knew T.D.A. Cockerell (1866-1948). I interviewed Beidleman in 2005.

A collection of some of Cockerell's letters, The Valley of the Second Sons (ed. William A. Weber), is available from Pilgrim Press (www.pilgrimpress.com).

MELISSA BARTON: How did you meet T.D.A. Cockerell?

RICHARD BEIDLEMAN: I was an undergraduate at the University of Colorado. Although Cockerell had been retired from CU for years, he still showed up on occasion, so I had the chance to meet him and his second wife [Wilmatte Porter Cockerell]. Even as an old man, when I knew him, he was still doing his research. He was a one-man Chautauqua institution.

I worked in the University of Colorado Museum as a graduate student after World War II. One of the jobs I had was bringing up to date with new labels the hundreds of bees Cockerell had collected over his professional career.

MB: What do you think we can learn from Cockerell today?

RB: I've read a lot of his publications. I was so impressed by a lot of the things Cockerell wrote about biology education, biology in society...if those were published in a book, I'd make every biology major read them.

T.D.A. Cockerell believed in getting in there, getting your hands dirty, and doing the science. When I went through *Valley of the*

Second Sons, I got ideas for things to do on every page. He wasn't just interested in science, but in the broad field of the biosphere.

Today there is so much information, particularly new breaking information, that it's almost impossible for anyone to dabble outside his field. To obtain a grant you need to specialize. I think it's a shame--some of the best scientists have really broad interests.

MB: Do you think his broad approach had any drawbacks?

RB: He was working in a whole series of independent pockets. If he had been an ecologist, he would have tied them together.



Crystal Peak: Memories from an Intern at the Florissant Fossil Beds National Monument

by **J.J. Huie**

The last time I visited the Florissant Fossil Beds was last summer when I was returning from a mountain biking adventure near Buena Vista. Walking across the parking lot to my car, I had to stop and let myself be a part of the tranquil scene: the soft green of the grassland mixed with patches of ponderosa pine forest, and, watching over the evening, Crystal Peak. Perhaps I had gone too long without being in a profoundly quiet place, but in that moment I felt very fortunate to have spent an entire summer as an intern at the park. During the summer of 2003, when I was an interpretive intern at the Fossil Beds, I joined a group of staff, interns, and volunteers for a hike up Crystal Peak. A large part of the mountain is private property, but there is a considerable amount of National Forest land as well, much of it with mining claims; therefore, one has to be careful when treading on the mountain, especially if the signs and claim posts look fairly new and the area appears to have been recently worked. As a group of nature lovers from the Fossil Beds, we too had to get our grubby fingers on some rocks so as to experience what makes Crystal Peak famous. The pegmatites (coarse-grained granite) of Crystal Peak contain a huge variety of minerals, including albite, biotite, columbite, fluorite, goethite, amazonite, muscovite, onegite, phenakite, milky quartz, and smoky quartz. In many other sites around the world, amazonite develops into anhedral (formless) masses rather than the euhedral (well-formed) crystals of Crystal Peak. The amazonite crystals can range from pale blue to sky blue to dark blue to dark blue-green.



View of Crystal Peak from the Florissant Fossil Beds National Monument. , Crystal Peak is an erosional remnant of a finer-grained, more resistant phase of Pikes Peak granite. The shape of the peak appears to be controlled by jointing in the granite.

Photo by S. Veatch

While I didn't find any topaz, white and blue varieties have been reported from the area as well. Whenever I see Crystal Peak, I will probably always envision a bunch of adults scattered along a mountainside, some on their hands and knees, searching for pretty rocks. The treasure of Crystal Peak is in the joy of discovery and the feeling of being a kid again.

Amongst the Aspen

by **Laine Weber**

This article originally appeared in the October/November 1991 Friends newsletter. Laine Weber has been a park ranger at Florissant for many years and is now a 6th grade science teacher at Woodland Park Middle School, although she returns to the park as a seasonal ranger in the summer. She has been a generous supporter of the Friends for many years. Laine and Kent Borges, the second Friends president, produced the newsletter every two months for several years. Many thanks go to Laine for her help ad support.

Autumn in the mountains of Colorado is truly a magical time. As if to compensate for the fact that a long winter is just around the corner, the aspens display a glorious brilliance, the stored-up summer sunlight given back for all of us to see. While the display is a marvel in and of itself, the story of the trees is equally marvelous.

Aspens have a mystique, yet they are the most widely distributed

tree in North America. They are found in mountainous areas from Alaska to Mexico. Widely distributed in space, they also provide a link with the distant past. Aspen probably became established during the Pleistocene, when vast sheets of ice covered much of the northern hemisphere. For aspen seeds to sprout, they require 4-6 weeks of constant moisture and bare soil, conditions that were prevalent at the margins of retreating glaciers but now prove to be rare.

Thus, today the aspen's primary means of reproduction is vegetatively, through root suckering. Sprouts shoot up from the roots of a parent tree, all genetically identical. Leaves of the same shape emerge in the spring and change color in the fall at the same time. These clones or "families" have the same color and texture of bark, the same branching characteristics, and share susceptibility to insect damage and disease. A group of clones can be distinctly different from the "family next door." Close observation

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Short Notes

by *Melissa Barton*

Geocaching at the Fossil Beds

Geocachers use personal GPS units to search for hidden caches, which often include a logbook and a stash of objects. An educational form of geocaching, earthcaching, has the goal of learning something about earth science. You can download the coordinates for an unofficial earthcache at Florissant Fossil Beds National Monument by going to Geocaching.com and searching for “Redwoods of Stone Earthcache.” Remember not to take or leave anything behind you, but feel free to sign the guestbook in the visitor center!



Photo by Melissa Barton

University of Colorado Museum of Natural History Launches Online Paleontology Database

The University of Colorado Museum of Natural History’s Invertebrate Paleontology and Paleobotany collections can now be searched online. These include ap-

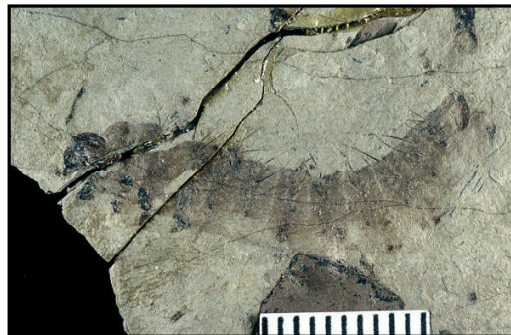


Photo courtesy University of Colorado Museum

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Aspen (Continued)

(Continued from page 5)

of a massive aspen forest reveals a mosaic of differences.

To a great degree, all aspens are susceptible to disease and insects. The aspen is host to more than 250 types of fungi, numerous bacterial and viral infections, and most types of insects. Despite the attacks, few trees die as they are strengthened by their photosynthetic bark. Unique in this respect, the net photosynthetic gain is about 2%, enough to help the stressed trees recover and live to an age of up to 120 years.

The 700 million acres of aspen forest in the western U.S. are of greater importance to more species of wildlife than all other species of trees in the montane forest ecosystem combined. Wildlife can be elusive but many animals leave signs on the trees that one can look for. Many different species of birds feed and nest amidst aspens. Aspens are a favorite food of cavity nesters, because the relatively soft wood is easily excavated. Also, look for circular dot patterns high on the trunks, made by feeding yellow-bellied sapsuckers. Elk spend a good deal of time amongst the aspen, calving in the aspen forests in the spring and feeding on the inner bark in the winter. You can find scarring on the trunks from their lower jaws scraping away at the bark. You can judge how long ago the elk were there by the darkening that occurs as the tree attempts to heal its wounds. Bear find various foods in the lush understory of the aspen forest and may stop to sharpen their claws as they forage about, leaving marks about five feet from the ground. Beaver and aspen are a match made in heaven. Beavers feed on the bark and down trees for building materials for dams and lodges. Signs of their activity are hard to miss.



The mercurial leaves of *Populus tremuloides* (the flattened stems permit the leaves to flutter at the slightest breeze, hence the Latin name, “trembling” or “quaking”) tell us that winter is near but the sight of them still brings pleasure. Knowing a bit more about them will add to the enjoyment.

Fagopsis longifolia (Continued)

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Based on characteristics of *Fagopsis* and other fossil plants, scientists have estimated the mean annual temperature at Florissant during the Late Eocene at approximately 10.7° to 14°C (51.2° to 57.2° F) (Meyer, 1986, 1992; Wolfe, 1992; Gregory and Chase, 1992) with an estimated paleoelevation of 1,899 to 3,299 meters (6,230 to 10,500 feet) (Meyer, 1992). There is counterevidence from non-floral studies that propose different mean annual temperatures and paleoelevations. Researchers are still working on this question.

Florissant also represents a time period just before a major cooling of the world's climate that occurred during the end of the Eocene and at the dawn of the Oligocene (Meyer, 2003).

The conditions of ancient Lake Florissant led to exceptional fossil preservation and preserved a number of fossils—like *Fagopsis longifolia*—that are used by researchers as proxies or useful indicators for reconstructing ancient environments and understanding biological evolution, paleoclimate, paleoelevation, and climate change.

Acknowledgments

I thank Stan Balducci for his assistance and Melissa Barton for providing valuable comments on this paper.

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Fagopsis longifolia is one of the most abundant fossils found in the Florissant Formation. The length of the leaves is 5 to 7 cm (1.9 to 2.75 inches); and the width is from 2.5 to 3 cm (1 to 1.2 inches). Specimen FLFO3129a, Florissant Fossil Beds National Monument.
Image by Russell Wood.



Fossils of *Fagopsis longifolia* are found between layers of paper-thin lake shales in the Florissant Formation from the latest part of the Eocene (34 million years ago). Most of the Florissant fossils are detailed compression and impression fossils of insects and plants. *Image by Donald Miranda.*

A Petrified Tree (Continued)

(Continued from page 2)

moreover, there is not a particle of the original tree in it, any more than there is flesh and blood in a marble statue or a plaster cast. It is a stone statue or restoration of a once living tree, far more perfect than that of any statue by the greatest sculptors.

It is not an uncommon notion, that certain substances or bodies have, after life is extinct, some mysterious power in themselves of turning themselves into stone; but such is not the case. A buffalo dies on the prairie; his flesh rots and passes away into various gases; his skeleton lasts a few years longer and then passes into dust and soil. Similarly a tree dies, rots, falls to the ground, and makes soil for other trees to grow on. Neither buffalo nor tree has any elements in itself that can transform any part of it into stone.

Suppose, on the other hand, a tree like our sequoia to grow near a marsh or lake. The waters of the lake encroach on its roots, kill the tree, and bury its stump in mud whilst the upper portion, falling into the lake, becomes water-logged, sinks to the bottom and is entombed in mud which arrests rapid decay. In this condition petrification may gradually take place.

Nearly all waters contain mineral matter, such as iron, soda or lime. If the waters are acid and heated, as they are apt to be in the neighborhood of volcanic action, they generally contain quartz or silica in a dissolved state, which they deposit in a gelatinous condition, like gum Arabic. This afterward hardens into agate or chalcedony as hard as glass. If clayey matter is added to it, it may form some kind of hard stone like jasper.

Suppose a tree, then, in the bed of a lake to be saturated through and through with such mineral-bearing water. The larger powers and veins are quickly filled with agate, opal or chalcedony, so like pine gum. Then a long-protracted, minute work goes on. As each tiny particle or wood-cell rots away, it is replaced by a minute particle of quartz or stony matter, till when at last every living element of the tree has vanished, a microscopically perfect restoration of the tree, both externally and internally, is left behind in stone- a monument for all time of the tree that lived and died ages and ages ago.

Such a restoration is as wonderful as if a modern sculptor could not only reproduce the external form of his model, but also the internal structure of blood-cells, veins and arteries. All trees that have fallen into lakes and rivers have not been so preserved.

Peculiar circumstances have been necessary for such petrification. The most favorable circumstances are often the presence of acid and hot springs in a volcanic neighborhood, such as we see in the geysers of the Yellowstone, where there are whole forests of petrified trees.

The surroundings of these fossil trees are no less interesting than the trees themselves. The roots are imbedded in shale and sandstone, the solidified mud of a primeval lake. This is composed of grains and fragments of volcanic lava, often as fine as the finest dust.

Opening the thin layers of this petrified mud with our knives, we find numerous impressions of fossil insects, such as ants, dragon-flies and tropical lantern-flies. A fossil butterfly impression has also been found-one of the very few ever discovered; so perfect that the color-pattern on its wings can be distinctly made out, and the species identified.

Mingled with these are equally perfect impressions of fossil leaves, of a semi-tropical character, such as those of a palmetto. A fossil bird and fossil fishes have been found. All of the remains indicate the existence at the time of the lake of a semi-tropical climate, very different from that of this neighborhood to-day.

From such remains and other discoveries we can get some idea of the history of the lake and its fossil trees.

Some thousands of years ago a small mountain lake nestled amongst these hills. Its banks were surrounded by luxuriant semi-tropical vegetation, amongst which, close to the edge of the lake, towered the great sequoia. Volcanic eruptions took place along the shore of the lake, and by violent explosions filled the air with lava dust and ashes, which fell in showers into the lake and formed its mud.

Leaves of trees that had been blown into the lake, and insects that perished on its muddy flats or in its waters, together with the water-logged stumps of trees, were periodically buried beneath these eruptions of volcanic mud. Hot, acid springs accompanying or following the eruptions assisted in the process of petrification.

The eruptions in time ceased, the lake dried up or was drained off, glaciers and floods cut ravines in the old lake beds, and exposed their fossil treasures.

The sequoias are probably the oldest, as well as the largest trees, now growing on this planet. They are survivals of an age long past. When we look up at their colossal forms we may say, This was the forest primeval, for they belong more to ages that are past than to the present age. They were, geologists believe, amongst the earliest genuine forest trees to appear on this planet.

Before then, there were but seaweeds and gigantic ferns, rushes and mosses, till about the middle of the earth's history- the time when the great lizards appeared. With them came in the great sequoia-tree. Around it were strange, gigantic forms of animal and vegetable life; and the survival amongst us to-day seems almost a strange as it would be to see one of those terrible, giant lizards walking among the trees of Central Park and passing from branch to branch.

The sequoia saw the ages of great reptiles fade away and give place to that of almost as great and formidable mammals. The sequoia, or rather its descendants, saw man arrive upon the earth, and doubtless witnessed what, if we knew it, would clear up the mystery of the "missing link." To-day it sees the railway train fly through what is left of its forests, and has the telegraph wire pinned to its thick bark.

In the present age there are but two varieties of sequoia, and

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Letter from the Superintendent (Continued)

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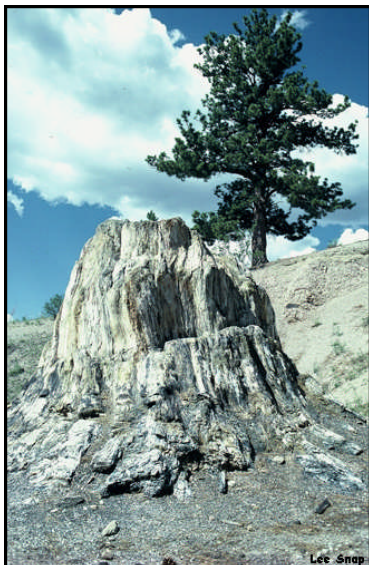
Monument's intention to continue to improve the current visitor center facilities to enhance the visitor experience. This year we converted the back office and storage area of the visitor center into a theater, carpeted the visitor center and entry porch, fabricated and installed new temporary exhibits, and installed new exhibit lighting.



A Petrified Tree (Continued)

(Continued from page 8)

those are confined to the Pacific coast. In ancient, that is, in geological, times there were twenty-six varieties, scattered over the world from the extreme Arctic Circle to Australia. This wide distribution accounts for our finding the fossil stumps in Colorado.



Lee Snap

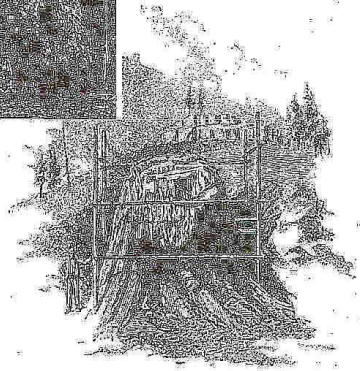


quartz or stony matter, still, when at last every being element of the tree has vanished, is microscopically perfect restoration of the tree, both externally and internally, as left behind in stone—a monument for all time of the tree that lived and died ages and ages ago. Such a restoration is as wonderful as if a microscope could not only reproduce the external form of the model, but also the internal structure of

survival amongst us today seems almost as strange as it would be to see one of those terrible, gigantic titans walking among the trees of Central Park and passing from branch to branch.

The world saw the age of great reptiles fade away and give place to that of almost as great and formidable mammals. The dinosaurs, in rather its decadence, saw man arrive upon the earth, and doubtless witnessed what, if we knew it, would clear up the mystery of the "missing link." To-day it sees the railway train fly through what is left of its forests, and has the telegraph wire planted to its track-bed.

In the present age there are but two varieties of reptiles, and these are confined to the Pacific coast. In niches, that is, in geological



Petrified Tree-Stump.

20th Anniversary (Continued)

(Continued from page 1)

presented a program on how the new exhibits in the Visitor Center were done. Former seasonal paleontologist Dr. Bill Dexter led a hike through Earth's history on the Petrified Forest Loop. Veatch presented a program on the Friends group about our educational outreach and other activities. REI provided a children's program on Leave No Trace. The new film, which the Friends helped to fund, was available for viewing in the new theater throughout the day.

The central location for all of the members to sign in and see exhibits highlighting Friends history and activities was the newly re-erected yurt. The Friends group was very instrumental years ago in providing funds to purchase two yurts to house the stumps temporarily. It was a treat for all to see one of the yurts up again and being used for educational purposes.

At 4:30 a silent auction started and hors d'oeuvres were served. To the music of the Florissant Jammers, dinner guests began arriving the amphitheater. Over 60 people enjoyed the music and the dinner catered by Ann Carlisle of Savoir Fare in Colorado Springs.

After the dinner, the five Presidents of the Friends—Richard Bradley, Kent Borges, Bill Dexter, Sally McCracken Maertens, and Steven Veatch—made brief remarks about their presidencies.



Photo by Sally and Hank Maertens

Veatch thanked everyone for all of the things that the Friends have accomplished over the years.



Photo by Sally and Hank Maertens

Highlights of the evening included:

Certificates of Appreciation were presented to Melissa Barton for all of her work on the website and the summer seminars; Jo Beckwith, the outlet manager for the Rocky Mountain Nature Association, for all of her support for the Friends over the years; and Lance Roberson and Dave Karlin for their work on the new theater and the restoration of the yurt with a handicapped ramp.

The Visitor Service Award, given each year to the person who most exemplifies the best in visitor service, was presented to Jeff Wolin, Lead Interpretive Ranger, for all of his work on designing and installing the new exhibits, helping with the summer seminars, work on the new Junior Ranger Program, and many other efforts. Wolin also received the STAR award from the park.

Friends President Steven Veatch and Vice President Sally Maertens also presented the Monument with a check for \$3000.00 for use to complete several jobs on their wish list. Superintendent Keith Payne accepted the check on behalf of the Park.

Many thank to everyone who made the entire event a great success.

Short Notes (Continued)

(Continued from page 6)

proximately 4,800 specimens from Florissant, most collected in 1906-1908 by the T.D.A. Cockerell expeditions, which also collected fossils for the American Museum of Natural History in New York. The University of Colorado Museum hopes to eventually include photographs of specimens in the online database, beginning with the valuable type specimens (on which taxonomic descriptions are based).

Receive Friends Website Updates by Email

Don't miss any news about the Friends or the park—sign up by email to be notified when a new article is posted to the Friends website. Your email will be kept private and will not be used for any other purpose:

<http://www.feedblitz.com/f/?Sub=247658>

Friends Invited to Pikes Peak Gem & Mineral Show

The Friends were invited to run a table with information and



Fossil logs at the Sexi Petrified Forest, Peru.
Photo courtesy of Dr. Herb Meyer.

exhibits at the Pikes Peak Gem & Mineral Show on June 23-24. Thanks to paleontology intern Eva Lyon for helping to staff the table.

Peruvian Fossil Conservation

On August 1, Florissant Fossil Beds National Monument Paleontologist Dr. Herb Meyer spoke at the Denver Museum of Nature & Science about the scientific exploration and conservation of the petrified forest of Piedra Chamana in the Andes of northern Peru. *Fossil logs at the Sexi Petrified Forest, Peru.* Peru, near the village of Sexi. Piedra Chamana dates to the middle Eocene, somewhat older than Florissant, and its petrified logs and fossil leaves represent a tropical rainforest.



VIP Sally Maertens helps kids make plaster casts of animal tracks.
NPS Photo/Greg Spalding.

At the 20th Anniversary Celebration, the Friends announced a partnership with the Asociación de la Preservación y Defensa de los Restos Paleontológicos del Distrito de Sexi (Association for Preservation and Defense of the Paleontological Remains of the District of Sexi), a grassroots organization devoted to protecting and developing for tourism and research the petrified forest of Piedra Chamana.

Park Paleontological Database Down for Maintenance

Florissant Fossil Beds National Monument's online database of notable Florissant specimens in museums around the world, located at planning.nps.gov/flfo, is temporarily down for server maintenance.

First Junior Ranger Day at the Fossil Beds

On July 21, Florissant Fossil Beds National Monument held its first Junior Ranger Day with a variety of activities, including orienteering, shale splitting, learning about wildlife and safety, making plaster casts from "animal track" molds, and watering the revegetation area in front of the administration building. Thanks to all of the staff and volunteers who made the event a success, including Jeff Wolin, Troy Fuhrman, Sally McCracken Maertens, and Keith Payne.

Proposed Fee Increase Reduced From \$4 to \$2

Thanks to public comment, the proposed NPS-wide fee increase for Florissant will be to \$5 per visitor 15 rather than \$7. The fee increase is scheduled for January 2008, although the NPS has not made a firm decision.

Ashfall and Algae (Continued)

(Continued from page 3)

cation outreach.” Ver Straeten will be presenting some of his findings from this summer’s research, “The fate of airfall volcanic ash in large and small lacustrine systems: ash stratigraphy of the Eocene Green River and Florissant Formations.”

You can read abstracts for these papers online at the GSA website:

http://gsa.confex.com/gsa/2007AM/finalprogram/abstract_127987.htm

http://gsa.confex.com/gsa/2007AM/finalprogram/abstract_131610.htm

As always, the paleontology division has many more projects planned for next year, both for research and for improving the storage and cataloging of the park’s collections.



Paleontology interns Kathy Salas and Eva Lyon monitoring the condition of the Big Stump site. *Photo: Melissa Barton*



Dr. Charles ver Straeten and Dr. Herb Meyer discuss possibilities for sampling volcanic ash at the “Scudder Pit” interpretive site. *Photo: Melissa Barton*



Instructors and students at the summer paleontology seminar, co-led by Meyer, Eberle, Benson, and Dr. Dena Smith. *Photo: Kathy Salas*

Ancient Lake (Continued)

(Continued from page 3)

compared with two published pollen studies from the Florissant Formation.



The view west across South Park from near our collection site. *Photo by: Melissa Barton*

The second day, we returned to our first site and made a second pass. Because of the degree of weathering and our limit to the road easement, we worked the site in pieces,

primarily on the surface. Again, mountain mahogany (*Cercocarpus*) was by far the most common fossil, but we also found some nice specimens of pine (*Pinus*) with intact needle bundles, a few fragments of cypress (*Chamaecyparis*), some well-preserved snails, and a few leaves that will require careful examination under a microscope.

Our third and fourth days were a great example of how scientific field work doesn't always run smoothly. After several days of heavy, most of the shale was buried in mud, and the exposed shale was extremely fragile.



Fossil mountain mahogany leaf and bundle of pine needles. *Photo by: Melissa Barton*

On our third day, we were joined by geoscientist Dr. Melissa Smeins from the Bureau of Land Management (BLM) and Mary Ellen Benson, a graduate student at the University of Colorado who is studying Florissant's fossil diatoms (algae) for her dissertation.

We spent the third day working in the recently dug road grader's ditch, but the layer exposed proved to be rich in ostracods ("seed shrimp") but not much else. We collected a number of samples

for further pollen analysis, as well as some samples from the ostracod-rich layers for possible diatom study (ostracods feed on diatoms), but only found a few insect fossils and one leaf fragment that may be identifiable later.



Living mountain mahogany at Indian Springs Ranch, near Cañon City. *Photo by: Melissa Barton*

On the fourth day, we explored the south end of the Antero Formation with Smeins, hoping to find some more localities on BLM land or in a road easement. Although we saw many pronghorn, fossil sites proved elusive. The Antero Formation is poorly mapped, and much of South Park is thoroughly vegetated and lacking in outcrops. We did observe some heavily mineralized



Dr. Melissa Smeins and Dr. Herb Meyer examine a map of South Park land ownership. *Photo by: Melissa Barton*

fossil wood, probably redwood (*Sequoia*), but the trip was otherwise unproductive.

The next step is to begin studying the collected material, particularly the pollen, in the lab. We will also continue to track down the small number of previous collections at other institutions. My advisor at the

University of Colorado Museum of Natural History, Dr. Dena Smith, has arranged for us to borrow some specimens from the Yale Peabody Museum of Natural History to supplement my study of the pollen. Although this collection is small, it is much more diverse than the fossils we collected this summer.



Fossil wood from the Antero. *Photo by: Melissa Barton*

Next summer we plan to try to relocate the Yale site. In the meantime, I

have thousands and thousands of pollen grains to examine!

Answers to History Questions in Spring Newsletter

By Sally Maertens

✦ Who was the Superintendent when the Friends formed in August of 1987?

◆ Thomas Wylie

✦ Who was the founding President of the Friends?

◆ Richard Bradley

✦ What was the first name of the Friends?

◆ Friends of the Fossil Beds, Inc.

✦ What CC professor testified in 1986 about saving the fossil beds?

◆ Richard Bradley

✦ What U.S. congressman has been the Monument's supporter for the longest time?

◆ Joel Hefley

✦ How many different t-shirt designs have we had?

◆ 2

✦ Who helped design our present design and when was it first sold?

◆ Dorry Bradley

✦ Who were the main speakers at the Monument's 20th Anniversary?

◆ Dr. Estella Leopold, Vim Crane Wright, and Dr. Beatrice Willard

✦ When did the Summer Seminar Series start?

◆ 1994 in celebration of the Monument's 25th Anniversary.

✦ How many Superintendents have the Friends worked with?

◆ 7

✦ What did the blueprints for the stump shelters call them?

◆ Trunk shelters

✦ When were the stump shelters (2) put up?

◆ Stump Shelter Dedication - April 26, 1997

✦ What were the shelters?

◆ Yurts

✦ When was the first "March for Parks?"

◆ March 24-25, 1990

✦ When was the first Memorandum of Agreement signed between the Friends and the NPS?

◆ May 25, 1989

✦ What was the first bank that we deposited our "big bucks" in?

◆ The Friends account was opened May 19, 1989 at The First National Bank of Colorado Springs with an initial deposit of \$200 from an anonymous donor.

✦ When was the Friends first Annual meeting?

◆ Saturday, November 4, 1989 at 2:30 at the Christhaven Lodge on Upper Twin Rocks Rd.

✦ When was the first "Stroll for the Stumps"?

◆ Saturday, November 16, 1991

More History Questions

✦ When did the Friends Board decide to fund the Stump shelters?

✦ Who was the March Chairman for the 1990 March for Parks?

✦ Who was the first Life member?

✦ How many Life members do we have?

✦ When was the first Visitor Service award given and to whom?

✦ What trail was dedicated on the Friends' fall hike, "Stroll for the Stumps," on November 16, 1991?

✦ Who was the third President of the Friends?

✦ How many members did we have in February of 1990?

✦ When did the Friends first begin trying to secure funds for a new Visitor Center?

✦ Who was the A-frame building where we hold our summer seminars named in honor of?

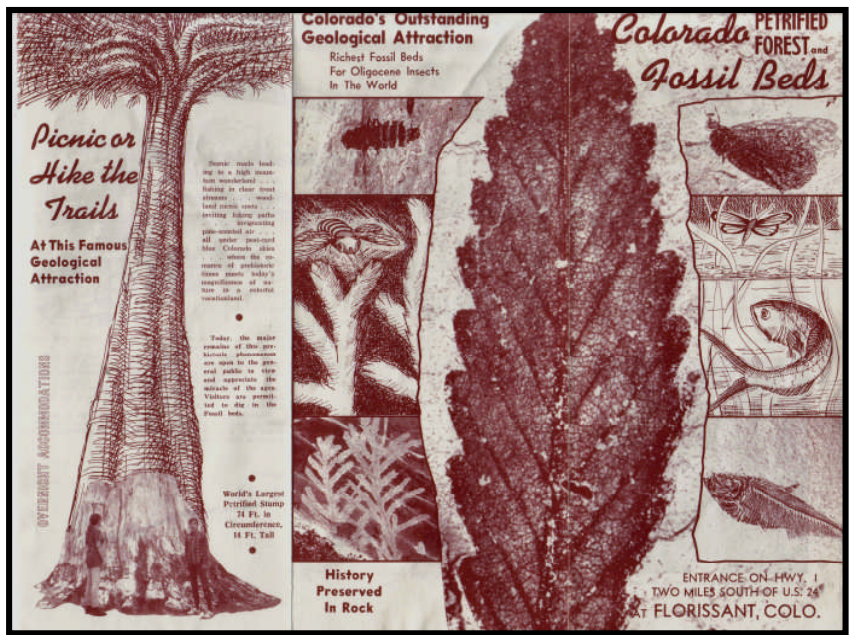
Have fun! Answers will be in the next newsletter.

Fagopsis longifolia (Continued)

(Continued from page 7)

Wolfe, J.A. 1992. Climatic, floristic, and vegetational changes near the Eocene/Oligocene boundary in North America. In Eocene-Oligocene climatic and biotic evolution, edited by D.R. Prothero and W.A. Berggren, 421-436. Princeton University Press, Princeton, N.J.

This early promotional brochure, circulated before the monument was established, depicts many intriguing fossils. Studying fossils is an extraordinary experience as they provide a way to travel into the vastness of deep time and provide views of ancient and lost worlds. *Brochure image courtesy of the Beth Simmons collection.*



Announcing the Friends of the Florissant Fossil Beds Annual Meeting and Potluck

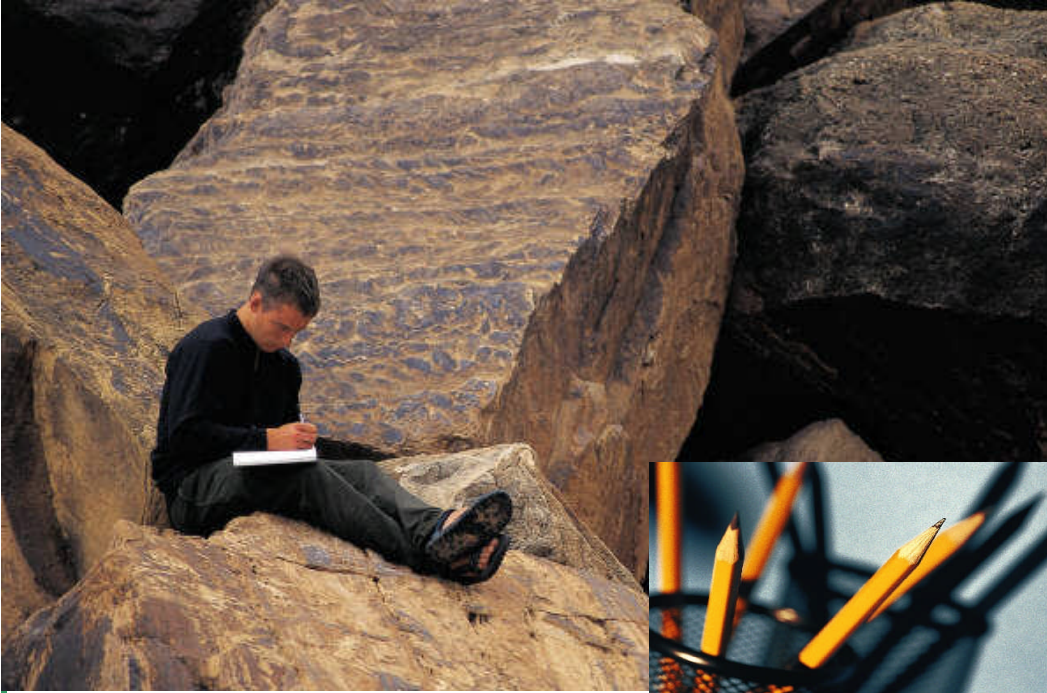
Date: October 20, 2007

Time: 12:00 p.m.

Place: Fowler Education Center ("A" Frame)

Please bring a dish to share. We will elect officers for the next term. If anyone would like to serve on the board as an officer or board member please let Steven Veatch know (sveatch@fossilbeds.org).





SCIENCE AND NATURE WRITING WORKSHOP

Date: February 2, 2008

Time: 9:00am-5:30pm

Location: Cripple Creek Park & Recreation

Instructor: Steven Veatch, Don Miranda, local authors

Registration Fee: \$49, includes certificate of completion (Optional Tuition Fee: \$30 for Colorado School of Mines graduate credit **payable during workshop**)

Science and nature writing is a popular genre of contemporary literature, offering endless opportunities for craft, creativity, and publication. This class is for anyone wishing to learn about science and nature writing. This course introduces you to the fundamentals of science and nature writing and includes the process of writing a single piece clearly and effectively. The workshop includes tips on finding and developing story ideas (hikes, stargazing, fossil hunts, etc.), discovering the difference between a subject and a story, outlining and structuring stories, strategies for opening leads and making transitions between your story and its larger contexts, and discovering the role of the editor in publication.

This is also a perfect class for teachers. With state standards and other competencies required of students, writing is an essential skill. This workshop approaches the subject in a clear and accessible manner that provides science-rich, student-centered learning experiences. Taught by experienced practitioners, this class will be a valuable asset for anyone interested in integrating inquiry-based science and literacy strategies in their classrooms, informal education programs, or for their own use. A certificate of completion will be awarded. Formal scientific writing will also be covered.

What others have said about the workshop . . . *"The instructors taught us amazing techniques for investigating the natural world around us, and revealed the most compelling ways to communicate our findings to others."*

"This workshop is an absolute treasure for anyone interested in writing about science and nature."

To register or for more information, contact:

Cripple Creek Park & Recreation

Phone: (719) 689-3514

Advertising Rates

Business Card Size:	\$6.00
¼ Page	\$12.00
½ Page	\$24.00
Full Page	\$48.00

You may submit advertisements to: Steven Veatch, P.O. Box 5938, Woodland Park, CO 80866 or via email: sveatch@fossilbeds.org.

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**We're on the Web!
See us at:
www.fossilbeds.org**

Email Addresses Wanted

Please send your current email address to sveatch@fossilbeds.org. This will allow us to send you reminders or events and important news items as they occur.

Please provide us with feedback on the newsletter or any topic you are interested in to Melissa Barton (webmaster@fossilbeds.org). We would also like to know who is interested in serving on various committees or on the Board contact Sally Maertens at the address to the left or my email to sammckind@aol.com.

For questions, contact the Editor.

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Send contributions via email as a Word document or in rich text format (rtf) to Melissa Barton at webmaster@fossilbeds.org.

The Friends of the Florissant Fossil Beds newsletter is published quarterly by the Friends of the Florissant Fossil Beds and is governed by the by-laws of the Friends. Articles appearing in the newsletter do not necessarily reflect the views of the National Monument, officers, members, or sponsors of the Friends.

About Our Organization....

In 1987, the Friends of the Florissant Fossil Beds, Inc. was organized by a group of dedicated individuals interested in assisting the National Park Service in its mission to preserve and protect our national treasures. As a non-profit organization, the Friend's mission is to secure resources to help preserve the fossils and promote programs and activities that enhance the Monument's education, research, and scientific objectives.

Friends' groups help many of the National Park service areas in a variety of ways. Membership fees and donations to the Friends of Florissant Fossil Beds are used for:

- Environmental education programs
- Field seminars
- Year-round interpretive programs
- Jr. Ranger programs
- Paleontological and geological resources
- Natural history resources
- Publications

Past accomplishments and ongoing support by the Friends of Florissant Fossil Beds includes:

- Major funding of the yurt shelters
- Travel and research funding for the Monument's paleontologist
- Assistance in the purchase of an all-terrain wheelchair for handicapped visitors
- Financial support for the University of Denver's (fossil data) Digitization Project
- Purchase of furniture for the seasonal rangers and intern housing
- Funding for other special Monument related celebrations and special events (such as the dedication of the new stump exhibit area May 11, 2002)
- Planning, funding, and coordinating the Monument's 30th Anniversary Celebration (1999) and 35th Anniversary Celebration (2004)
- Funding for the Monument's newspapers each spring
- Funding and coordination of annual Summer Educational Seminars Program

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