



Friends of the Florissant Fossil Beds eNewsletter

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Every Fossil Needs a Friend

#34—April 2017

Save the Date

Join us for our second annual **Friends of the Fossil Beds** fine arts event with a special **Purchase Patron Pre-Show** sneak peek and early sales event the evening of Friday August 11th. Meet many of the artists in person. Funds will be raised through ticket sales for the pre-sale event on our website www.fossilbeds.org or from Friends board members. The art is inspired by the Pikes Peak region and the flora and fauna that thrive here. We are honored to have world-renown artist Mort Solberg as our featured artist along with a variety of national and local artists represented. Friends board members, Wayne Johnston and John Schwabe are assisting Ken Shanika, our Teller county artist extraordinaire, to select the featured artwork. Ken provided invaluable expertise in establishing our Plein Aire show last year and this 2017 show which will include a broad scope of admissions. List of participating artists will be posted on our web site.

The presale ticketed event will include free special event evening admission to the Monument, music and light hors d'ouerves. You'll want to be the first to see and purchase these remarkable works of art while experiencing the magical environment that the Monument provides on an early summer evening. Keep your eyes open for special email notification of the online ticket sales or from the board members.

Saturday and Sunday August 12th and 13th will feature special art experiences for kids in addition to the Monument's regularly scheduled hikes, Homestead tours and educational opportunities. We're looking forward to another successful event.



More on the 2017 Annual Fine Arts Festival and Sale

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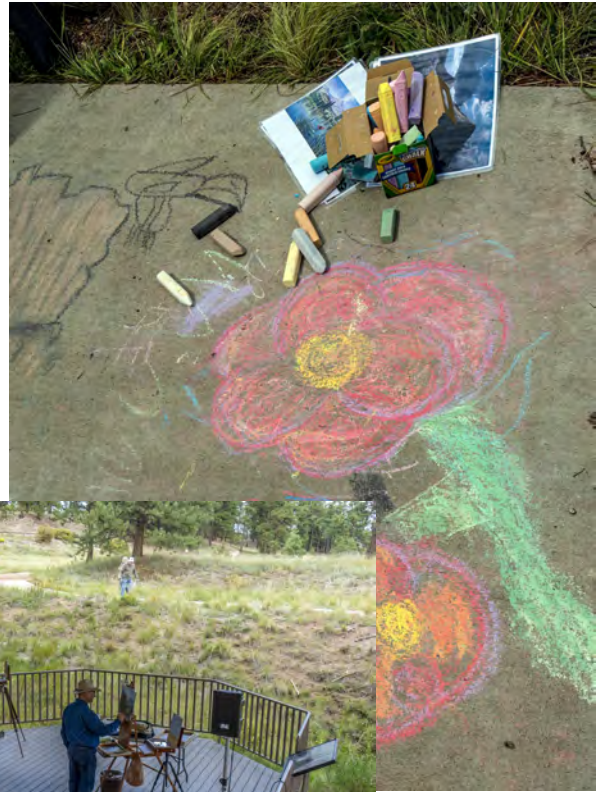
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BE THERE!!



More on the 2017 Annual Fine Arts Festival and Sale



Artist Trail Hikes

In preparation for the Fine Art Show and Sale happening August 11-13, the public is invited to participate in guided hikes specifically designed for artists. John Schwabe, Volunteer Trails Coordinator and Friends Board member will provide an in depth perspective on the trails, geography, vegetation and wildlife of the National Monument. The hikes will begin at 9:30 meeting at the Visitor Center and last until Noon. An entrance fee of \$5 is required for adults. Federal /National Park Passes are accepted..

Hornbek Homestead and Wildlife Loop Trail Artist Guided Hike

Friday April 21 9:30- Noon

Twin Rocks- Shooting Star Trail Artist Guided Hike

Friday May 19 9:30-Noon

Bring water bottle, sturdy hiking shoes, camera, note pads, and dress for varied weather. The trail hikes are easy to moderate, some off trail, short, steep climbs may occur but are definitely optional. Pets are not allowed on National Park Trails. The hiking pace will be moderately slow to accommodate photography and questions. Artist who are participating or are interested in participating in the August Fine Art Show are encouraged to attend. Space is limited to 20 hikers. More Artist Hikes may be scheduled in June if demand continues

To sign up or for more information contact John Schwabe 719-689-3174,

Ranger Jeff Wolin 719-748-3253 ext 202

Fire and Ice Festival Success

The Friends had a very successful meet & greet while educating over 1,075 visitors at the Cripple Creek & Victor Mine Visitor Center at the February Fire & Ice Festival. The Newmont Mining Company very generously donated \$500 which was used to purchase magnifying hand lenses with our Friends logo and website inscribed. These lenses were distributed to children who attended the Ice Festival while visiting the CC&V educational visitor center. It was a great opportunity for Friends volunteers as well as the public to understand the history and current work at the Cripple Creek and Victor Mines. The kids were educated about the geological effects of volcanic activity and the modern day discoveries-one of a volcano that produced gold and the Guffey volcanic eruption resulting in our special Florissant Fossils.

The gold mine staff (with special thanks going out to Linda White and Brad Poulson) and Friends volunteers enjoyed sharing information. We all anticipate collaboration on next year's event. The Monument staff reported increased visitation on Ice Festival weekends with some visitors specifically mentioning they heard about the Fossil Beds at the CC&V Ice Festival event.

New Friends Board Member

Clara Steward, Environmental Coordinator from the Newmont Sustainability and External Relations Department recently joined the Friends Board. We look forward to her expertise and willingness to cultivate volunteers from the Mine to assist with the upcoming summer restoration and trails projects. Welcome Clara!

2017 Volunteers Needed for 2017 Fine Arts Festival

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The Friends of the Florissant Fossil Beds need volunteers to assist with this year's Show and Sale to be held at the Monument August 11-13. Last year's event was lots of fun and successful. We need your help to be successful at our primary fund raiser for the year.

Join the committee that will meet once a month at the Fossil Beds or in Woodland Park based on committee members' convenience. We need help with marketing, graphic design, show set up, food and clean up. Any help will be appreciated. To help contact: John Schwabe or Patty Glatfelter at 719-689-3174 or via email at jspg@live.com.

Fund Raising Goals for this year and

Over the past few months members of the board have been meeting with Michelle Wheatley, Superintendent to identify priority needs for the Monument that will require financial resources that our membership can facilitate or directly provide. The needs may be more demanding with an anticipated National Park Service shrinking budget. We expect that some of these needs can be met with diligent grant writing efforts from board members or individuals in the general membership who have the interest or talent to pursue grants. You may even know of grant opportunities through your personal or business connections. Many businesses provide matching grant funding for worthwhile projects.

The following priority needs have been identified by the Superintendent, her staff and the Friends board as meaningful and potentially achievable goals:

- Fowler Educational Seminar Building: Septic Line Replacement and Plumbing Repairs Project
Needed Amount: \$8,500
- Youth Outreach and Onsite Programming for Youth Grade K-12
Needed Amount: \$2,500
- Improving Visitor Experience-Trails Wayfinding Sign Improvement Project
Needed Amount: \$3,000
- Park Bench Project along the Petrified Forest Loop Trail
Needed amount: \$3,200
- Military Outreach Program- Serving the Pikes Peak Region
Needed Amount \$5,500

Projects that our current financial resources will fund include Fossil learning lab supplies-this includes shale, new microscopes, Ryker boxes, office supplies Amount-\$1785; Youth Outreach-traveling trunks and rolling carts with supplies for off site educational experiences \$2400; Healthy Parks Healthy People summer yoga programs \$935; Special event supplies for 4th of July in Woodland Park, Junior Ranger Days, Farmer's Markets, Lake George Gem and Mineral Show, Night Sky programs etc. \$550

If you have any ideas on how to reach our financial goals or can help in any way with grant writing, participation in fund raising events or providing a direct monetary donation feel free to explore our website at www.fossilbeds.org or call me at 719-689-3174.

Thanks for your ongoing interest and contributions that keep our National Monument vital part of our community and nation.

Patty Glatfelter, President jspg@live.com

Recap of the NPS 2016 Centennial Celebration at the Florissant Fossil Beds

The belated Friends annual meeting of February 18,, 2017 provided an opportunity to review our 2016 budget report, elect a slate of officers for the 2016-2017 year and celebrate our accomplishments. Superintendent Michelle Wheatley presented an annual report which revealed the highest visitation since 2001-a 2016 total of 73,564 visitors. This was up 6.41% from 2015. The Friends efforts at publicizing the Monument at the Farmer’s Market, Cool Science Fairs, gem and mineral shows and the Lighter Side of Christmas parade events all contributed to these statistics. Thanks to all the Friends board and members who volunteered countless hours for the Centennial Celebration events. 3,500 school students were served in the 2015/2016 school year by the Monument. Over 4,000 Junior Rangers were sworn in during 2016 in hopes that they will be the future stewards of our National Parks.



Don’t ever doubt how valuable your contributions of time, money and talents are! For more information on specific needs of the Monument and the Friends organization check out the archived February 2017 newsletter on our website: www.fossilbeds.org. The needs are diverse and offer great opportunities for individuals of all ages and abilities to contribute to the mission of our National Park Service. Find your niche for service to the Monument through the Friends. Want to help? Call me: Patty Glatfelter, President at 719-689-3174 or email at jspg@live.com.



The 2017 Summer Seminar Series

Listed below are descriptions for the Series. Topics include Volcanoes, Primitive Skills, Water, and Ecology of the Montane Life Zone. You may register online beginning May 1 or by calling 748-3253.

Descriptions to date include:

Forests, Fires and Faucets: How Forest Health and Wildfires Impact Water Supplies and Citizens

Date: Wednesday, July 19, 2017

COURSE DESCRIPTION:

This seminar will explore the linkages between our forests and the water we depend upon for municipal supplies, agriculture and recreation in the arid West. The Coalition for the Upper South Platte, a nationally recognized watershed non-profit will examine these relationships with the participants and explain the science behind the forest to faucet connection. Participants will learn about Western watersheds and how the results of the Watershed Assessment for River Stability and Sediment Supply (WARSSS) was used in the Upper South Platte Watershed to implement remarkable recovery and restoration projects. A field trip during the seminar will include a tour of both pre-fire green-forest restoration sites and post fire restoration sites near Deckers, CO including Trail Creek, Chessman Reservoir and Horse Creek. CUSP (Coalition for the Upper South Platte) staff, as well as hydrologists and scientists from the U.S. Forest Service will lead the seminar.

Fun and Facts: Primitive Skills

Date: Monday, July 10, 2017

COURSE DESCRIPTION:

This seminar will explore major concepts of the Stone Age: survival and sustainability. No electricity! No cars! No groceries! Just how did the people who lived in the Stone Age do it? Join us to see how they actually lived. Rub two sticks together and make fire! Spin bark into rope and string. Identify wild plants that are good for food and making survival items. Learn to make a stone knife and other stone tools. Learn how to throw an Atlatl, the ancient Mammoth spear of our ancestors. You will learn all of the basic skills required to live off the land without modern conveniences. You will review the many resources, including children's books that are available for language arts lessons on the Stone Age. Teachers will learn many ways of using the information and skills with their students which will satisfy the Colorado Academic Standards.

Please don't forget to thank and support the generous sponsors who donated to the Friends' efforts for the 2016 Lighter Side of Christmas Parade which raised \$12,200 for our assistance to the Monument.

Natural History of the Florissant Fossil Beds: The Ecology of the Montane Zone

Date: Thursday, July 13, 2017

COURSE DESCRIPTION:

The Florissant Fossil Beds is nestled in the Montane Life Zone, the middle of a layer cake of environments that stretches from the lowland grasslands of the eastern Plains to the wind-swept Alpine tundra above tree line. The Montane hosts an array of habitats that support hillside forests of Ponderosa Pine and Douglas Fir, flower strewn meadows fringed with Aspen, and streams and wetlands that punctuate this dryland habitat with oases of water loving plants and animals. This mid-summer seminar seeks to identify the patterns of nature among the rolling hills of Florissant by exploring the biological adaptations that make possible the rich diversity of the area's flora and fauna. The participants will spend a good bit of the seminar in the field with a short introduction with some lecture and sharing of resource materials written by the presenter.

The Volcanoes of South Park

Date: Tuesday, July 25, 2017

COURSE DESCRIPTION:

South Park, including the Florissant area, was covered by volcanic materials derived from volcanoes in the Guffy area and from the Mount Princeton center of the Sawatch Range. The Guffy area was the center of a large stratovolcano that blocked the drainages of South Park. Huge ash clouds composed of extremely hot solids, liquids, and gasses flowed down valleys flanking the Sawatch Range and covered all or much of South Park several times in the geologic past. This one-day seminar will be a field-based tour of the volcanic geology of the Thirtynine Mile volcanic field adjacent to Florissant and the welded ash flows of South Park derived from the Mount Princeton batholith.

More descriptions of additional courses to come....

Florissant Fossil Beds Geologic Trail

National Park Service
U.S. Department of the Interior

Florissant Fossil Beds
National Monument
Colorado



The Florissant valley is a constantly changing landscape, shaped by the power of erosion, uplift, and eruptions. Geologic activity recorded at Florissant began at least one billion years ago when magma cooled to form the Pikes Peak pluton. Volcanoes continued to influence the area until at least 34 million years ago, when eruptions covered Florissant in ash. The area is changing today as Grape Creek cuts through the valley and as rain and snow wear down the raised features of the landscape. On the Geologic Trail (map on back of page) you can see the history of geologic processes that have shaped the Florissant valley.

1 Stop One — Eocene Lakebed

To reach the Geologic Trail, exit the visitor center onto the back patio and take the trail immediately on the right (the Petrified Forest Loop trail). Walk about 1,000 feet (300 m) to a trail junction and then take the right fork (see map on back). As you walk across the open grassy meadow, you are crossing what once was the bottom of a lake. The shales that preserve many fossils were deposited in this lake 34 million years ago and now form the Florissant Formation.

Layers in Florissant shales are paper-thin.



2 Stop Two — Ice Age Gravels

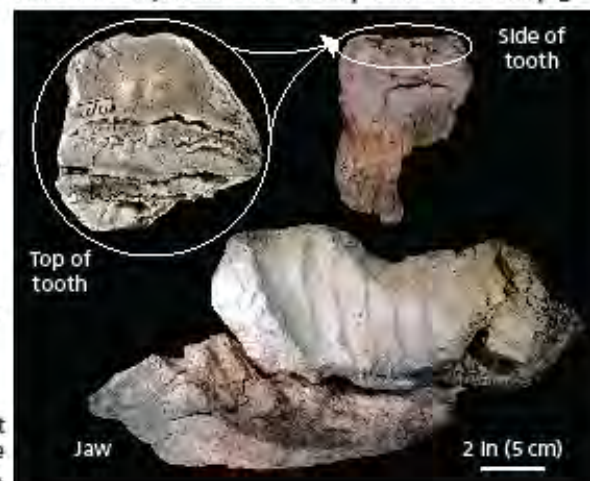
As the Geologic Trail ascends onto a low ridge, you will notice that the ground is made up of gravel. The gravel contains decomposed granite that has eroded from the slopes of surrounding hills into the Florissant valley. This material, called grus or colluvium, is a few feet deep (a meter or more) and covers much of the Florissant Formation within the monument (see map on back). Mammoth bones were discovered nearby in this layer in 1994 and have been radiocarbon dated as more than 43,000 years old (Quaternary). The Florissant fossil comes from one of the highest elevations (8,400 ft or 2,550 m) at which ice age mammoths have been found. Another fossil mammoth site was discovered in 2010, at Snowmass, Colorado, about 100 miles (160 km) to the northwest of the monument and 500 feet (150 m) higher in elevation. The Snowmass site has yielded more than 5,000 fossils from mammoths, mastodons, and other animals.

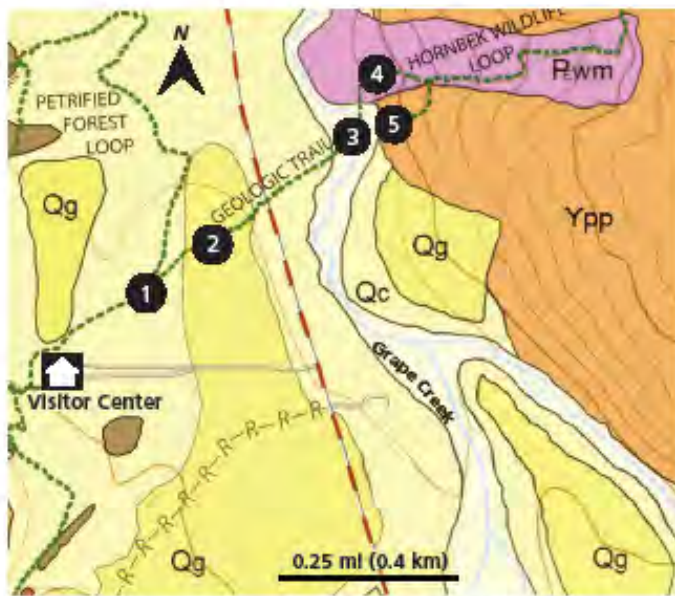
Fossil tooth and jaw bone fragments show that mammoths lived around Florissant during the ice ages tens of thousands of years ago. *FLFO-2392 and 2393.*

3 Stop Three — Pikes Peak Granite

On the way to stop 3 the trail crosses a bridge over Grape Creek. From the bridge, you will see large boulders made of Pikes Peak Granite. This rock unit formed more than 1.08 billion years ago, deep underground, and cooled over millions of years. It came to the surface with the uplift of the Rocky Mountains. The Pikes Peak Granite makes up a structure called a batholith, which forms when a large mass of magma is emplaced deep underground and hardens. The Pikes Peak batholith stretches about 25 miles (40 km) wide and 80 miles (130 km) long, from Castle Rock to just south of Colorado Springs.

The Earth is dynamic and rocks continue to change. Today, Grape Creek is eroding Pikes Peak Granite and other rocks and is redepositing the sediment downstream. The stream deposits, called alluvium, are shown on the map on the back of the page.





Qal	Quaternary Alluvium	Rwm	Florissant Formation, Lower Mudstone
Qc	Quaternary Colluvium	Rwm	Wall Mountain Tuff
Qg	Quaternary Gravels	Ypp	Pikes Peak Granite
— — — — —		Trail	

The Geologic Trail crosses Teller County Road 1 between stops 2 and 3. **Please use caution and watch for traffic!** Also be aware that the trail climbs 80 ft (25 m) from stop 3 to stop 5 and has a steep stretch between stops 4 and 5.

4 Stop Four — Tuff Outcrop

After crossing the bridge, you will begin to ascend the trail through a section of Wall Mountain Tuff. The Wall Mountain Tuff formed 37 million years ago from an ash flow that erupted from a caldera located near modern Mt. Princeton, about 50 miles (80 km) west of Florissant. The superheated ash cloud settled to the ground, welded together, and cooled to form a volcanic rock called rhyolitic welded tuff. A layer of this tuff once covered the area, but streams have eroded most of it out of valleys like the one below you.

You can recognize the Wall Mountain Tuff from its fine-grained texture and gray-beige color. It contains a few quartz crystals large enough to see with the naked eye, but it is composed mostly of matrix material called groundmass. The visible crystals, or phenocrysts, formed in the magma long before the eruption.

5 Stop Five — Geologic Trail Overlook

As you walk between stops 4 and 5, you will cross a contact between the Wall Mountain Tuff and Pikes Peak Granite. At the overlook you are standing on Pikes Peak Granite, the oldest rock in the monument. It forms the basement rock within the monument, and it is exposed here because the overlying rocks have been eroded and weathered away.

In the distance you will see the modern Florissant valley and many surrounding ridges and peaks. In the late Eocene, 34 million years ago, Lake Florissant would have dominated the foreground with the Guffey volcanic center on the horizon. Today, those features have been eroded or buried and replaced by new features, like Mt. Pisgah to the south.

The Story Behind Crystals

Rhyolitic tuff and granite contain similar proportions of the minerals quartz, feldspar, and amphibole. However, the texture and size of crystals in these two rocks differ. Notice the fine-grained structure of the tuff (left) and the larger quartz crystals (Qz) in the granite (right).

The size of constituent crystals in an igneous rock indicates how quickly the rock cooled when it formed. Larger crystals take longer to grow, so they are found in rocks that cooled more slowly. The clearly visible crystals in the granite formed as magma hardened deep underground over thousands or millions of years. The microscopic crystals in the tuff formed as hot ash and larger crystals welded together at the surface and cooled almost instantly.

Wall Mountain Tuff



Pikes Peak Granite

