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Friends of the Florissant Fossil Beds eNewsletter

Every Fossil Needs a Friend

#40—January 2019

Happy, Happy 2019 and the 50th Anniversary of “The Beds”!

I wanted to express my thanks to all those who helped me move through my tenure as President of the Friends. I won't be far away—I'm stepping aside to the role of VP so I can assist our incoming President, Robyn Proper. She'll do a great job due to her extensive background in education and working for the National Park Service at our beloved Monument. She will offer a fresh perspective and a boatload of enthusiasm. My role in the Friends would not have been possible without the consistent support of the Friends Board members and the dedicated Monument staff. Everyone contributes voluntarily on the Board and the NPS staff offer people power and creativity that can't possibly be exceeded at any other park.

We are forever grateful for your monetary donations, voluntary contributions of time, talent, and your encouragement. We had record breaking numbers of visitors (approximately 80,000 for 2018) and are on solid financial footing as we continue the Monument's goals of expanded educational outreach to a wide variety of audiences in southern Colorado, nationally and internationally. I encourage you to participate in any or all of our 50th anniversary celebratory events. Keep an eye out in future newsletters and email blasts regarding fun and educational opportunities in Florissant. If you have time, a unique skill or professional contact that you think may benefit our 35-year-old 501(c)(3) Friends group contact the Friends at www.fossilbeds.org. We look forward to seeing you!

Gratefully,

Patty - Outgoing President



Patty receiving Certificate of Appreciation on behalf
of the Friends from Ranger Jeff Wolin in 2014

Greetings from the New President

Hello! My name is Robyn Proper, and I am excited to be serving as the new president of the Friends of the Florissant Fossil Beds, Inc. I was born in New Orleans, Louisiana, and came to Colorado Springs because of Hurricane Katrina in 2005. I recently completed my 27th year of teaching while working in Fountain Fort Carson School District 8. While living in Colorado Springs with my two boys, I met and married the “boy next door”, Jeff Proper. My husband is also a board member and a former board president. We recently finished building our forever home in Florissant. I have worked as a seasonal interpreter at the monument for four summers, and I absolutely love everything about the place! I am so looking forward to helping the board and the staff members in planning and celebrating the 50th anniversary of the monument in August of 2019. Please join us in celebrating! If you need information, I can be reached at robynproper@gmail.com

Happy New Year and thank you so much for your continued support!

Robyn



Celebrating 50 Years - Significant Dates in the 1969 Timeline to Establish Florissant Fossil Beds National Monument

by Herb Meyer

Florissant Fossil Beds National Monument celebrates its 50th Anniversary in 2019. For most national monuments, such an event would recognize one or two mundane dates on which presidential or possibly also congressional actions had occurred. Florissant is far more dynamic in the events that we have to celebrate, due largely to the lively actions that occurred to prevent real estate development of the privately-owned fossil beds. As Congressional bills moved forward very slowly, and real estate developers moved in, the Defenders of Florissant took the case to the U.S. Federal Courts in an attempt to stop the development. Many people were involved in what became one of the first movements in environmental activism and set precedents for the emerging field of environmental law. Three women – Estella Leopold, Bettie Willard, and Vim Wright – spearheaded the effort while lawyers Victor Yannacone and Richard Lamm led the legal arguments in court. It's an exciting story, and if you haven't already read the book *Saved in Time: The Fight to Establish Florissant Fossil Beds National Monument* by Estella Leopold and Herbert Meyer, then 2019 is a great time to do so! Here are some of the highlight dates that we will look back on 50 years later:

Feb. 3, 1969.	H.R. 5953 reintroduced to 91 st Congress. Senate Bill S. 912 is introduced soon after.
May 23, 1969.	Contract for sale of 1800 acres to real estate developers becomes known to local neighbors. Sale is expected to result in development of A-frame cabins at the fossil beds.
May 29, 1969.	U.S. Senate Hearings are convened in Colorado Springs followed by a field trip to Florissant. Many prominent scientists testify including Drs. Estella Leopold, Harry MacGinitie, Bettie Willard, Peter Robinson, and John Chronic.
July 9, 1969.	Case of the Defenders of Florissant is presented to the Federal District Court by lawyer Victor Yannacone, assisted by lawyers Richard Lamm and Tom Lamm. Judge G. Hatfield Chilson denies the case.
July 10, 1969.	Case is presented to the 10 th Circuit Court of Appeals, presided by Chief Justice Alfred P. Murrah and Justices Breitenstein and Hickey. Yannacone argues with the "Dead Sea Scrolls" analogy. Restraining Order is granted until July 29.
July 20, 1969.	Senate Bill S.912 passes.
July 29, 1969.	Case is presented again to the Federal District Court. Judge Chilson denies the case again and mocks the lawyer representing the Defenders of Florissant. In a rare exception, the 10 th Circuit Court of Appeals agrees to hear the case again the same day, and Justices Murrah, Breitenstein, and Hickey preside. The Restraining Order is continued. A group of women activists mobilize at Florissant in readiness to lie in front of bulldozers, but instead find the bulldozer drivers at the Thunderbird Bar and meet with them near the property to drink.
Aug. 4, 1969.	House passes the Florissant bill by voice vote.
Aug. 7, 1969.	Senate agrees to the House version of the bill.
Aug. 20, 1969.	President Nixon signs the bill into law. Florissant Fossil Beds National Monument is established.

January 2019 FLFO Activities & Events

FLORISSANT FOSSIL BEDS NATIONAL MONUMENT WILL BE CLOSED DURING THE GOVERNMENT SHUTDOWN.

Activities Planned at Florissant Fossil Beds National Monument in January

Florissant Fossil Beds National Monument is open year-round. During January, the Monument is open daily
9:00 AM – 4:30 PM.

Friday, January 4, Night Sky Program, 7:00 PM - 9:00 PM.

Join park staff and members of the Colorado Springs Astronomical Society to gaze at the dark skies above Florissant Fossil Beds in search of planets, galaxies, nebulae, and more. Meet at the visitor center.

Saturday, January 19, Winter Track Detectives! 11:00 AM – 12:30 PM. Join an interpretive park ranger for a guided hike (up to 2 miles) to discover the clues left behind by the Monument's wildlife. As a track detective, you might encounter tracks, scat, feathers, rubs, burrows, and much more left behind by birds, coyotes, elk, and badgers or perhaps even see some of the wildlife in person. Dress in layers and be ready to walk on uneven ground and possibly snow. Meet at the visitor center.

Monday, January 21, Fee Free Day, Martin Luther King Jr. Day. Enjoy a fee free day at Florissant Fossil Beds in celebration of Martin Luther King Jr. Day.

There are no additional fees for any park programs beyond the daily entrance fee of \$10.00 per adult (15 and younger are free) and \$35.00 for an annual pass. Florissant Fossil Beds National Monument offers 15 miles of beautiful, yet lesser known, hiking trails to explore, a free Junior Ranger Program, three short self-guided trails, a park video, museum exhibits, and bookstore. For additional information, please call (719) 748-3253 ext. 0 or visit our website: www.nps.gov/flfo or on Facebook or Twitter at /FlorissantNPS

About the National Park Service: More than 20,000 National Park Service employees care for America's 418 national parks and work with communities across the nation to help preserve local history and create close-to-home recreational opportunities. Learn more at www.nps.gov

Florissant Fossil Beds National Monument Announces Entrance Fee-Free Days for 2019

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Florissant Fossil Beds National Monument Announces Entrance Fee-Free Days for 2019

Florissant Fossil Beds National Monument will waive its entrance fee on five days in 2019.

The five entrance fee-free days for 2019 will be:

- Monday, January 21 – Martin Luther King, Jr. Day
- Saturday, April 20 – Start of National Park Week/National Junior Ranger Day
- Sunday, August 25 – National Park Service Anniversary
- Saturday, September 28 – National Public Lands Day
- Monday, November 11 – Veterans Day

Florissant Fossil Beds National Monument is one of 115 national parks that has an entrance fee. The other 303 national parks do not charge an entrance fee. The National Park System includes more than 85 million acres and is comprised of 418 sites, including national parks, national historical parks, national monuments, national recreation areas, national battlefields, and national seashores. Last year, 331 million people visited national parks spending \$18.2 billion, which supported 306,000 jobs across the country and had a \$35.8 billion impact on the U.S. economy.

The annual \$80 America the Beautiful National Parks and Federal Recreational Lands Pass allows unlimited entrance to more than 2,000 federal recreation areas, including all national parks. There are also free or discounted passes available for senior citizens, current members of the military, families of fourth grade students, and disabled citizens.

There are no additional fees for any park programs that run throughout the year (such as ranger programs and night sky programs) beyond the daily entrance fee of \$10.00 per adult (15 and younger are free). This is a 7-day pass. Florissant Fossil Beds National Monument offers 15 miles of beautiful, yet lesser-known, hiking trails to explore, a free Junior Ranger Program, three short self-guided trails, a park video and museum exhibits, and bookstore.

For additional information, please call (719) 748-3253 or visit our website: www.nps.gov/flfo or on Facebook or Twitter at /FlorissantNPS

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Winter Paleontology Intern

My name is Kacy Patrick and I graduated in May from the University of Wyoming with a Master's in Geology. I started my internship in the Paleontology Division at Florissant Fossil Beds in October and originally planned to be here until the end of December; however, I have accepted a new term that will take me through the end of March!

I am interested in the effect of climate change on complex ecosystems, but I discovered a new passion while in school: exhibit and experience development! I think that unconventional education like what you receive at a park like Florissant or a museum is far more engaging and influential to visitors than a traditional learning setting. My internship here at the Fossil beds has offered invaluable experience collaborating with a group of people in order to produce an accessible yet thorough learning experience for visitors. My main projects are about working to enhance the virtual education of Florissant through things like creating information website pages, developing lesson plans, and writing scripts for a new mobile app that will provide a guided tour along the geologic trail. Starting my new term in January I will be continuing work on some of my virtual experience projects as well as starting a preservation experiment involving the collection here.

I'm excited and nervous to figure out my next step, whatever it may be. Though a career in paleontology is not certain, I know that what I've been able to do here has prepared me to accomplish my dream: to combine science, art, and experience to help educate and engage my fellow man!



Reduce Your Taxable Income While Supporting One of Your Favorite National Park Sites through the Friends

It is close to that time of year again... taxes! If you are 70½ or older and have an IRA, you can transfer some or all of your Required Minimum Distribution (RMD) to a charitable organization without it being considered as taxable income. The money counts as your required minimum distribution but is not included in your adjusted gross income! Your Friends group is a 501(c)3 organization and qualifies as an approved charitable organization. To do this you must contact your IRA Administrator and request some or all of your RMD be sent directly to the Friends of Florissant Fossil Beds, Inc. - our tax number is 84-114146. Also, our official address is Friends of Florissant Fossil Beds, Inc., Box 851, Florissant, CO 80816.

Please consider making such a contribution to the Friends.

For additional information on giving your RMD to charity, click the following link by Kiplinger:

<https://www.kiplinger.com/article/retirement/T045-C001-S003-faqs-about-giving-your-rmd-to-charity.html>

Resident Coyotes of the Monument out on Patrol



Photo taken by Gary Censoplano

The Great Backyard Bird Count – 2019

The Friends of the Florissant Fossil Beds will be sponsoring our 7th Annual Great Backyard Bird Count on Saturday, February 16, 2019 starting at 9 AM. We are holding this event in conjunction with the 21st Annual International Great Backyard Bird Count which will be held for 4 days from Friday, February 15 – Monday, February 18, 2019.

This international event is a citizen science effort to capture a worldwide count of bird populations. It began in 1998 and is a joint partnership between the National Audubon Society and the Cornell Lab of Ornithology. This count helps us to learn more about how bird populations are doing around the world, how to protect them and to keep track of the endangered species. The statistics from the count help scientists all over the world implement conservation measures wherever necessary. In the count of 2018, there were 192,458 participants all over the world, 6310 species were counted and 176,905 checklists were submitted. Almost 29 million individual birds were counted. If you more statistics about last year and important information learned, go to birdcount.org.

The sign-in site for our event on the 16th will be in the yurt starting at 9AM. We will have 2 separate times for counting. The first count will go from 9:15 – 10:30 and the second count will go from 10:45 to 12 noon. During the morning counts and from 1 PM to 3 PM, there will be other activities available for children and their families including a bird scavenger hunt and the making of bird feeders.

Bring your family and friends to have a great time. If you would be able to help with this event, please contact Sally McCracken at 719-687-9204 or e-mail her at sammckind@aol.com. We are always looking for volunteers for our events.

See you on February 16th at 9 AM!!!



Support the Friends When You Shop Amazon

Do you shop on Amazon? Did you know you can support the Friends of the Florissant Fossil Beds with little effort and without any additional cost to you? Just follow these simple steps:

- 1.) Got to smile.amazon.com
- 2.) Enter your standard Amazon username and login and then click the “Accounts & Lists” tab in the upper right-hand corner.
- 3.) After you click, a drop-down menu will appear. In this drop down menu, click “Your AmazonSmile” and then select your charity.
- 4.) To find us, simply type in “Friends of the Florissant Fossil Beds Inc” in the search bar and then click the “Select” button when the name appears in the results bar.
- 5.) Once you’ve selected Friends of the Florissant Fossil Beds, be sure to bookmark your link with “smile.amazon.com” at the beginning of the URL and shop from this link. If you do not shop from this bookmarked link, Amazon does not make a contribution to your selected organization.

Thank you for your support!

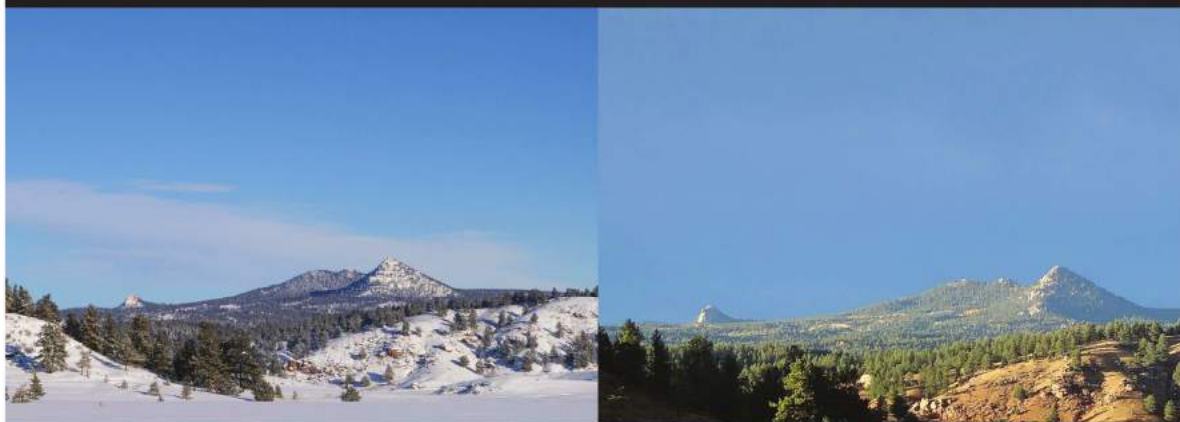


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Florissant Fossil Beds Climate Change

National Park Service
U.S. Department of the Interior

Florissant Fossil Beds
National Monument
Colorado



Changes in the Earth's climate have occurred since the planet formed 4.5 billion years ago. Eocene Florissant was at the threshold of one of the most significant climate changes since the extinction of non-avian dinosaurs—a massive cooling event that affected life around the globe. Modern Florissant faces a similar challenge from climate change today. How can fossils help us understand climate change of the past, and how does this knowledge help us make decisions in response to modern climate change?

What was Florissant like 34 million years ago?

At the end of the Eocene Epoch, the time when plants and insects were falling into Lake Florissant to be preserved as fossils, Florissant was wetter and much warmer than it is today:

	Mean Annual Temperature	Mean Annual Precipitation
Modern	4°C (39°F)	38 cm (15 in)
Eocene	11–18°C (52–64°F)	50–80 cm (20–31 in)

Today Florissant has a cool temperate climate and primarily evergreen coniferous vegetation, like pines and spruces. During the Eocene, Florissant had a warm temperate or even subtropical climate with deciduous broadleaved plants and exotic tall conifers. Although modern and Eocene Florissant had comparable summer temperatures, winter temperatures are much colder now, restricting the types of plants that can live here.

How do we know what past climates were like?

There are many methods that scientists can use to reconstruct the climate of a past ecosystem. At Florissant, researchers rely



primarily on plant fossils to determine what Eocene Florissant was like. Unlike animals, which can migrate with the seasons, plants are rooted to the ground and have specific adaptations for survival in a particular climate.

One way to infer climate from fossil plants is to look at the nearest living relatives of the fossil species and the climates those plants live in today. A modern plant probably lives in a climate similar to the one its Eocene relative lived in. Another method involves considering the physical form of the fossil plant. Many plants have physical adaptations, especially in their leaves, which help them survive more successfully in certain climates than others. The size, shape, texture, and teeth of a leaf are all features that reflect the climate a plant inhabits.



A combination of multiple methods must be used when reconstructing climate because no single method is flawless. When reconstructing Eocene Florissant's climate, scientists consider the physical features of fossil leaves, the climates that the fossils' nearest living relatives live in, and other methods like analyzing the tree rings in Florissant's petrified redwood and hardwood stumps.

What happened after Eocene Florissant?

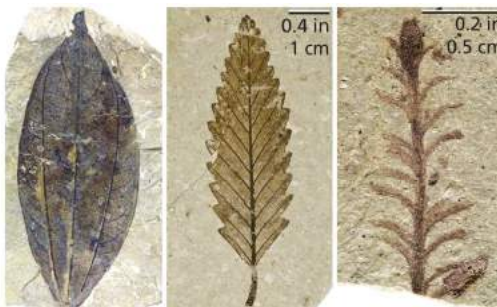
As the Eocene transitioned into the Oligocene Epoch 34–33 million years ago, global climate cooled significantly and rapidly. This was the result of new cold ocean currents created by continental plate movement around Antarctica. Studies have found that the North American climate cooled by as much as 8–10°C (14–18°F) in less than a million years.

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Florissant is one piece of the fossil record that spans the Eocene-Oligocene transition and shows how plant communities and climate changed during this time.

Late Eocene Florissant had a warm temperate climate at high elevation, as shown by the dominance of broadleaved plants with a few conifers. In contrast, a nearby and slightly younger early Oligocene site at comparable elevation had a cool temperate climate, indicated by a dominance of conifers such as pine, fir, and spruce.

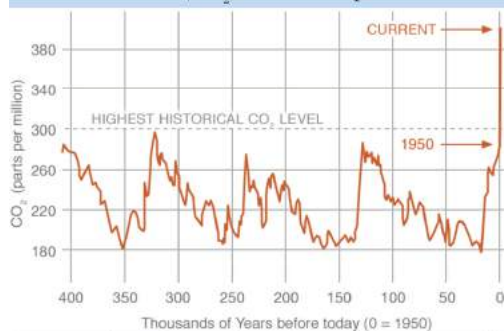
A similar change is evident from fossil floras in the lowlands of the west coast, where the subtropical forests of the late Eocene gave way to temperate deciduous forests in the Oligocene. These lowland Oligocene floras share many types of plants with Eocene Florissant, such as pines, firs, redwoods, oaks, hickories, elms, maples, and roses, indicating that these types of plants dispersed from higher to lower elevation as climate cooled. The shift from subtropical to temperate at low elevations and from warm temperate to cool temperate at high elevations is evidence of the effect global climate change can have on terrestrial ecosystems.



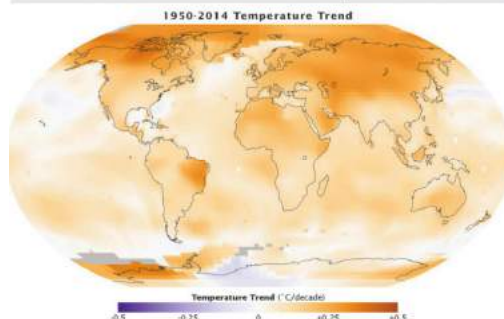
Fossil leaves from subtropical, warm temperate, and cool temperate climates. Left to right: "*Cinnamomum dilleri*" (UCMP-735), *Fagopsis longifolia* (FLFO-11513), *Sequoia affinis* (FLFO-6488). UCMP image courtesy of the University of California Museum of Paleontology.

What causes climate change?

Data from scientific studies prove that climate is changing, as it has changed since the Earth formed, but why is this climate change concerning? Most past global climate changes are attributed to variability in solar output, the Earth's orbit and tilt, volcanic activity, and plate tectonics. The rapid warming occurring on Earth today is caused not by any of these natural variations, but by human augmentation of the atmosphere's natural greenhouse effect. By burning fossil fuels like coal and oil, we increase the concentration of carbon dioxide (CO₂) in the atmosphere. As a result, the atmosphere is able to trap more heat, raising global temperature.



Ice cores show that CO₂ levels have oscillated naturally between 180 and 300 ppm for the past 400,000 years. Since 1950, CO₂ levels have risen above 400 ppm and are still rising. From NASA's Global Climate Change website, data from the National Oceanic and Atmospheric Administration.



Temperatures have increased more rapidly in some regions of the Earth than others. The greatest warming between 1950 and 2014 has been near the poles. From the NASA Goddard Institute for Space Studies.

How is climate change affecting us?

In addition to direct effects, such as melting ice sheets and rising sea level, global warming changes the way water is evaporated into and released by the atmosphere, intensifying hurricanes, droughts, and other weather phenomena. In our national parks, climate change has a variety of effects:

- Species ranges are shifting northward and upward in elevation
- Species interactions within communities are changing as species respond differently to shifting seasons and subsequent changes in the timing of flowering, breeding, and migration
- Storms are becoming stronger and more frequent
- The ranges of animal-carried diseases are growing
- Rising water levels are threatening park lands and buildings
- Wildfire activity is increasing

At Florissant, native species as well as petrified stumps and shale fossils are at risk from shifting seasons, changing weather patterns, and wildfires.

How do fossils help us understand climate change?

If CO₂ emissions were stopped altogether, global temperature would continue rising as the CO₂ already in the atmosphere trapped more heat. Climatologists can study ancient climates to see how the planet responds to sustained changes in CO₂ and how long it might take to recover.

Paleontologists can study fossils to see how past life responded to climate change, such as in the Eocene-Oligocene transition. In the past, populations have responded by moving to more favorable climates, adapting to the new climate, or going extinct. Ancient climates changed over thousands to millions of years, providing time for populations to respond. Modern climate is changing over the course of decades. Like ancient populations, living organisms can migrate or adapt in response to change, but they must respond much more quickly to avoid extinction.

By reducing our impact on the atmosphere and by using the history of ancient climate change to predict how our planet and the life on it will be affected, we can help provide a more stable climate in the future and protect our natural resources today.

