Friends of the Florissant Fossil Beds eNewsletter

Every Fossil Needs a Friend #37—April 2018

President's Spring Message

We can all be proud of a successful fundraising campaign for the Fowler Educational Seminar Building water and septic renovation. The completion of this project will occur after the Visitor Center parking lot is repaved this summer. The timing will insure that there will not be any heavy equipment parked on or near the lines. The necessary $10,000 required for the septic system was acquired by many individual Friend donors such as the Bradleys (founding members of the Friends) and Fowler family members. Some dollars came from corporate donors and matching funds facilitated by individual Friends. Proceeds from our annual art festival fundraiser and summer seminar proceeds also contributed to the success of the campaign.

Future 2018 fundraising efforts will target a Phase II Matching Grant for accessibility improvements and refurbishing the Fowler building. This includes modifications of the parking entry to the building, replacing the entry door, a lighting update, an added decking shade structure, a remodeled restroom with door replacement, grab bars, a new sink and toilet. A $10,000 grant has been submitted by the NPS for a 50/50 funding match. If awarded, funding would be needed by October 2019.

We all receive many donation requests throughout the year for worthy causes dear to us. The 2018 tax regulations are changing and there are various ways you can consider supporting our efforts. Friends of Florissant as a 501 (c)(3) can accept corporate donations or matching gifts. Material donations of hardware or building supplies would extend the value of funds raised. The 2018 tax law modifications allow taxpayers age 70 ½ to transfer up to $100,000 from their IRA's each year to count as part of their minimum distribution. If you itemize you are still allowed to donate amounts up to 60% of your adjusted gross income. These options should be discussed with you tax accountant or financial advisor to see if you have resources that could help the Monument achieve our fundraising goal.

The board deeply appreciates all your support throughout the year. Please consider joining us for special Friends events that are in the planning stages. This includes a "Friends Only" event at the Clare Fossil Quarry in Florissant this summer and an August educational event at the Fossil Brewery in Colorado Springs. The Annual Art Festival should be a great time in October to meet new Friends and have access to Monument inspired art work. Keep your eyes on future newsletters for details.

Don't forget, "Every Fossil Needs a Friend". Let me know if you have more creative ideas for fundraising!

Patty Glatfelter, President jspg@live.com

Friends Board Members

Great Backyard Bird Count Wrap-up

On Saturday, February the 17th, the Friends of the Florissant Fossil Beds NM, sponsored the 6th Annual Great Backyard Bird Count. The weather cooperated and 3 different groups registered 5 different species of birds that amounted to a total count of 23 birds seen.

Debbie Barnes and 3 members of the Aiken Audubon Chapter of the Pikes Peak region assisted the 3 groups with the count. Debbie also did a program in the theater on the "Birds of Florissant" based on her book.

We look forward to next year when we will have a very large group of children and their families from the 13 YES Clubs in the Pikes Peak region. A Thank you to everyone who helped with the count.

Debbie talking birds in the yurt (above) and leading a group on a count (bottom center)

SAVE THESE DATES!!!

Colorado's fall colors may be at their best

Friends of Florissant Fossil Beds Benefit Fine Art Show and Sale-October 6th and 7th

Patron Pre-Show Friday October 5th 6 to 8 pm – Enjoy the patron show with live music, light hors d'oeuvres, non-alcoholic refreshments and a special time after hours in the Monument.

The show is open to the public on the 6th and 7th at the Fossil Beds Visitor Center 9 am to 5 pm

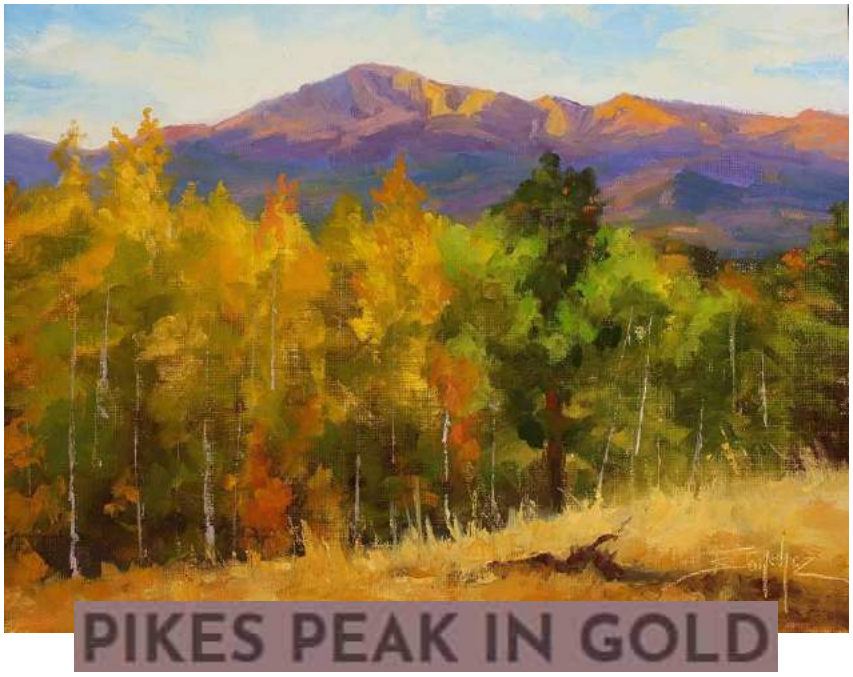
The Friends use the Fine Art Show as our primary fund raiser. Last year was a good success. All Friends members as well as prospective buyers will be invited for a first view of the wonderful paintings. The featured local artist this year is Terri Sanchez, whose sample of work can be seen below. Check out her website www.terrisanchez.com to see more of the quality of art we will have available.

The Friends will need volunteers to assist the week of the event. This including set up, parking, food service and clean up. Interaction with the public will help us with welcoming outreach.

Publicity and marketing are our greatest needs. That will start in July. Organizational meetings will begin on a TBD date in late May. They will be announced via email blast, the newsletter and the next board meeting. Come join our committee! We had a great time last year and I expect an even better time this year.

For more information contact John Schwabe or Patty Glatfelter at jspg@live.com 719-689-3174 or Wayne Johnston at wayne.jpohnston719@q.com .

If you are interested in entering the juried show contact Ken Shanika 303-941-8300.



By Terri Sanchez

10 Years, and Counting, with the National Park Service

For those of you who do not know me, my name is Whitney, and I have worked permanently at Florissant Fossil Beds National Monument since 2012 as an Administrative Assistant, Interpreter, and Education Coordinator. This July, I will have worked for the National Park Service for 11 years! I was awarded recently with a certificate from my Superintendent, signed by our Regional Director, recognizing me for working 10 years in the National Park Service. I was quite surprised and honored with such an award, and honestly have not been keeping track of my years. While working as a park ranger can be challenging and difficult at times, I would say the majority of days in my career have been some of the most rewarding, treasured days of my young adult life. What led me here has been quite a journey.

My story doesn't start at the Florissant Fossil Beds. My story starts from a young age, growing up on the sandy beaches of Lake Michigan, swimming before I could walk, playing outside for hours on end chasing fireflies, building sand castles, and picking wild berries. My Dad was a park ranger too. When I was born, he worked as a maintenance worker at Sleeping Bear Dunes National Lakeshore.

As a child, my family and I moved. Often. My Dad's career with the National Park Service took us to beautiful places. Growing up, I always lived in or near a National Park. After Michigan, we moved to the Midwest. I saw oceans of corn for as far as one could see. My Dad traveled all over the country as he trained to become a historic architect with the National Park Service. Each summer, my mom, brother, and I, and family dog tagged along on these fun adventures. We traveled to almost every state and visited endless parks. I was intrigued by the preservation not only of Presidents' homes, but also that of wildlife and scenery. From the heart of the Midwest, living in Iowa & Nebraska, my family moved again. This time to the deep south of Tennessee.

The Natchez Trace Parkway became our new home. Tennessee's green horse pastures, prominent plantations, and dense green leafy forests became an instant love of mine. My Dad worked in Leiper's Fork, a short jaunt from Reba McEntire's country estate. I loved the land, the music, the slow pace of southern living. Soon enough though, we moved west.

We moved to La Junta, Colorado. The eastern plains. My Dad took the position of Facility Manager at Bent's Old Fort National Historic Site. Now in middle school, I became eager to volunteer at the park. Each weekend, I volunteered for the interpretive division. As a kitchen laborer, I dressed in time period clothing, and made fresh tortillas and eggs for park staff and visitors to enjoy. Some days I sat churning butter, listening to the crackle of pinon burning in the fort's fireplaces and the call of a distant peacock. I loved being in character and talking to visitors from all over the country.

Interior of Bent's Old Fort National Historic Site in La Junta, CO

Eventually, my Dad helped me apply for my first summer seasonal NPS position. Back in Michigan, I landed a job right out of high school at Keweenaw National Historical Park. I was the mail and errand girl. It wasn't my dream job, but it was a foot in the door. It was the beginning of something great.

Soon, I was off to college to study public speaking and journalism. Summers brought adventure and excitement. I worked two summers at Isle Royale National Park. As an interpretive ranger, I lived my summers on this rugged, isolated island surrounded by the immense Lake Superior. With no roads on the island, coworkers & I hiked, boated, canoed, and kayaked to get to where we were going. I was thrilled with sightings of magnificent moose, the eerie call of loons and wolves, and magical displays of dancing northern lights in the night sky. This rare beauty that I was able to call home instilled a calling. I wanted to make a career, a life with the National Park Service.

Whitney and a coworker during her time at Isle Royale National Park

In 2007, I graduated from Fort Lewis College in Durango, Colorado. Without a plan or a job, I closed my eyes and moved my finger quickly over the Colorado map. It landed in rural southeast Colorado. I tried again. This time, my finger landed on Leadville. It's not easy landing a job with the NPS. It is even harder to land a permanent job with the NPS. But, I was persistent. I worked another summer season with the NPS, became a raft guide, and an elementary art teacher, and then it happened. I had my first real interview for a permanent position with the NPS.

In the fall of 2008 I started my first permanent position within the interpretive division at Curecanti National Recreation Area. Curecanti NRA, containing Blue Mesa Reservoir, Colorado's largest body of water, was surrounded by rugged, sage filled mesas, wildflowers, and distant snowcapped mountains. I loved the water as much as the land of the Gunnison valley. It was a perfect time in my life. My husband and I lived in park housing, owned our first dog, and spent days skiing, rafting, fishing, and exploring the western slope. My position at the park allowed me to engage with visitors, present boat tours, rove the lake, and be mentored by a most talented education coordinator. Four years later, as new opportunities opened for us both, we found ourselves moving to the Front Range.

In 2012 I started a permanent position at Florissant Fossil Beds National Monument. Although, it was not the fossils that appealed to me most, but it was rather the most wonderful, dynamic, and friendly staff that attracted me to the position. I am happy to say that the Florissant valley is my home. I love my job. I wear many hats and that keeps everyday interesting. I love working with kids, being part of a great team, crunching numbers, hiring and mentoring, and sharing my experiences with our visitors.

My story will continue and I hope that the next 10 years, like the last, are full of as many happy memories, places, and delightful people.

And the Award Goes to…

Sally McCracken-Maertens is the longest standing board member for the Friends of the Florissant Fossil Beds. For over 20 years, she has worked tirelessly behind the scenes to plan and support events promoting environmental education. This year, Sally was recognized for her efforts at the Teller County Cares Service Awards held in February. The committee chose Sally to win the award in the category of Environment. Sally is responsible for planning and executing the Summer Seminar Series offered at the Fossil Beds each year. She also plans our Great Backyard Bird Count. Sally is involved with the Catamount Institute and the efforts of that organization to provide environmental education opportunities for students in the Woodland Park area. These activities are only the tip of the iceberg! She has an amazing ability to help people and organizations work together to showcase our beautiful Teller County. Congratulations, Sally! Your efforts span decades, and you deserve to be recognized.

Robyn Proper

Sally (left) speaking after being presented with her award

Summer Seminars

A Reminder – Be watching the Friends website: fossilbeds.org around the middle of April. We are finishing up paperwork, setting dates and finalizing presenters. Confirmed seminars include "Wildlife Management" presented by Tonya Sharp who spent 23 years as a District Wildlife Manager for the Colorado Division of Parks/Wildlife), "The Natural History and Ecology of the Flammulated Owl" presented by Dr. Brian Linkhart, and "Insects and Spiders" by Eric Eaton. These are 3 of the 5 seminars that we will be offering this summer. Hopefully you will consider joining us for 1 or more of the seminars.

Registration can be done by mail, phone or through our website: www.fossilbeds.org

April 2018 Activities & Events

National Park Service
U.S. Department of the Interior

Florissant Fossil Beds National Monument
15807 Teller County Road 1
Florissant, CO 80816

Release date: Immediate
Contact: Jeff Wolin
Phone number: (719) 748 – 3253 ext. 202
Date 3/27/2018

Florissant Fossil Beds National Monument
News Release

Activities Planned at Florissant Fossil Beds National Monument in April

Florissant Fossil Beds National Monument is open year round. During April the Monument is open **9:00 AM – 5:00 PM.**

Friday, April 13, Night Sky Program, 8:00 PM – 10:00 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, nebulas, and more. Meet at the visitor center.

Saturday, April 21, FEE FREE DAY! Come celebrate the first day of National Park week by enjoying a fee free day in the Monument.

Saturday, April 21, 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, 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. This program is free to the public.

There are no additional fees for any park programs beyond the daily entrance fee of $7.00 per adult (15 and younger are free). 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

About the National Park Service. More than 20,000 National Park Service employees care for America's 417 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

Monument Staff to Visit "Sister Park" in Peru

The Friends have supported a partnership with the Monument's "sister park" in Peru for the past several years. The petrified forest site, known as El Bosque Petrificado Piedra Chamana, is located in the Andes Mountains near the village of Sexi. It preserves wood and leaves of a 39 million year old fossil forest. The fossil forest is featured on the Friends' website at http://peru.fossilbeds.org/ and has been highlighted in many of the previous newsletters.

The Monument has sponsored several previous field expeditions to the site in 2000, 2005, 2007, and 2009. This spring, in May, we will have another expedition involving the Monument's paleontologist Dr. Herb Meyer and post-doctoral GIP intern Dr. Sarah Allen, along with Dr. Deborah Woodcock of Clark University and Dr. Dennis Terry of Temple University. The site visit will involve scientific research that is supported by a grant from The National Geographic Society. The researchers will be investigating new leads for fossil wood and leaf localities, and will also sample the fossil soils for isotopic studies. The work will help to refine interpretations about the ancient climate of equatorial South America during the middle Eocene. The team will reexamine some of the fossil sites that were mapped and photographed by the Monument's staff in 2005 in order to observe changes that have occurred since then. A new scientific paper describing many of the new species of fossil wood was published in 2017 by Woodcock and Meyer as our work at the site continues. We look forward to sharing more information with the Friends' members in upcoming newsletters as our work continues.

Piedra Chamana Petrified Forest

Photos from http://peru.fossilbeds.org/

Join Florissant Fossil Beds' staff for a

CLEAN-UP day

Celebrate Earth Day!

All WELCOME!

Volunteer to pick up trash in the park

Friday, April 20th, 10 AM - 12 noon

- Park will provide safety vests, trash grabbers, bags, and gloves.
- Items to bring: dress accordingly for weather, water bottle, brown bag lunch.
- Please RSVP no later than April 18th by calling 719-748-3253, ext. 122.
- Ice cream social to follow with prizes for the best collected "trash" art.

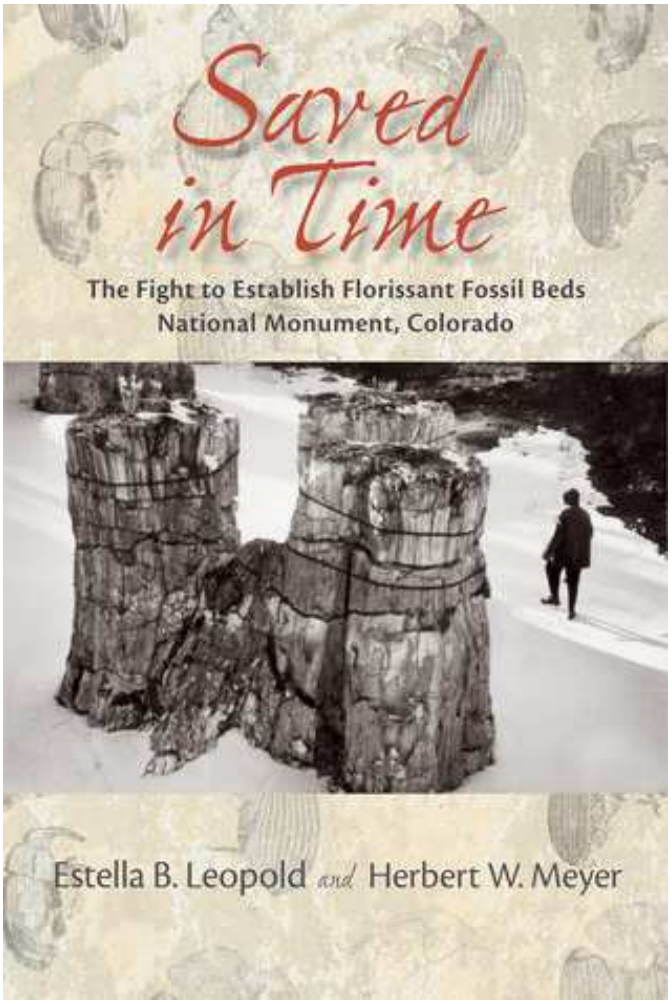
Fun Fact About Florissant Fossil Beds

Ever wonder what the Thunderbird Inn and Florissant Fossil Beds have in common?

Here's an excerpt from the Book "Saved in Time" by Estella Leopold and Herbert Meyer that's available at our bookstore:

"When Vim Wright's group of women returned from Florissant, they told us that they first found the bulldozer drivers at the Thunderbird Bar in Florissant. The ladies went up to them and announced that they were going to block passage of the bulldozers. The men looked anxious and said, "Oh, you are?" But the ladies promised first to meet them in the field with a thermos of hot coffee and brandy, in case that sounded good to them. The answer was that, yes, they would share spiked coffee with the ladies at the site."

This may have played a key role in saving our fossils?? Read the book published by University of New Mexico Press. It's an entertaining gem about the Monument's early history.



Photos from the Backcountry

Do you ever catch unique views of Florissant Fossil Beds National Monument while you are out exploring? Friends board member and park volunteer Gary Censoplano does when he goes out for his frequent trail patrols. See a few of the photos he has taken over the last couple of months below. And if you have a photo you would like to share of the monument, email troyruiz1@gmail.com to have your photo included in our next newsletter.

Walking Saw Mill Trail, heading towards the Boulder Creek Trail, when a snow squall suddenly appeared blocking the sun and blue sky

Looking towards Pikes Peak while walking a ridge

WANTED

LOOKING FOR NPS SEASONAL EMPLOYEE HOUSING:

2-3 Bedrooms

2 Bathrooms

Rental for 6 months to 1 year

Colorado Springs, Cripple Creek, Woodland Park, Divide,

Lake George, Florissant areas

PLEASE CONTACT MICHELLE WHEATLEY AT:
719-748-3253. EXT. 101

Number 5 of the Geologic Bulletin Series, 2017 – Page 1

Florissant Fossil Beds

Fossil Plants

National Park Service
U.S. Department of the Interior

Florissant Fossil Beds
National Monument
Colorado

More than 130 plant species have been described from Florissant. These are represented by leaves, fruits, flowers, seeds, pollen, and tree stumps. Fossilization is a complex process that can be affected by a number of factors, and multiple forms of fossilization preserved plants from Eocene Florissant. The fossil plant community at the site provides evidence for dramatic changes in climate over the past 34 million years.

How were the fossil plants preserved?

Most of the plant diversity at Florissant comes from the abundance of plants preserved in shale. The volcanic mudflow that preserved the redwood stumps was very high-energy, meaning that only the most durable plant parts, such as trunks, cones, and seeds, survived the flow intact. More delicate plant parts like leaves and flowers were preserved poorly or not at all.

Delicate plant parts were deposited at the bottom of Lake Florissant, a low-energy, low-oxygen environment. Their fine features are preserved in paper shale, a very fine-grained rock produced by the deposition of volcanic ash, clay, and single-celled algae called diatoms. These delicate fossils are still trapped within layers of rock and are only revealed through natural weathering, which causes the fossils to deteriorate, or excavations by the paleontology staff. During excavations, researchers dig out pieces of shale, split them to reveal the fossils, and bring them back to the lab where they are safe from the elements.

Where did the Eocene plants live?

Eocene Florissant was made up of a variety of habitats, ranging from the aquatic environment of Lake Florissant to the drier and harsher environments of the surrounding mountainsides. Since most of the plants preserved in lake shales are terrestrial species, they had to be transported into the lake from wherever they grew, facing possible destruction in the process. The farther a plant lived from the lake, the less likely it was to fossilize.

Species like *Sequoia* (redwood) were preserved frequently because they lived in wet valley bottoms near the lake. Pine, mountain mahogany, and oak, pictured above, are seen less frequently as fossils, and they lived on more distant hillsides.

The abundance of certain species also plays a role in how often they are preserved. *Fagopsis longifolia*, the most common fossil plant found at Florissant, is an understory tree that inhabited the banks of the lake and streams. The number of these fossils relative to those of other species suggests that *Fagopsis* was also one of the most common species in the Eocene environment.

Left: *Sequoia* (redwood). Above, left to right: *Pinus* (pine), *Cercocarpus* (mountain mahogany), and *Quercus* (oak). Right: *Fagopsis* (extinct).
FLFO-3661, 11481, and 4096; UCMP-3661; YPM-30121.

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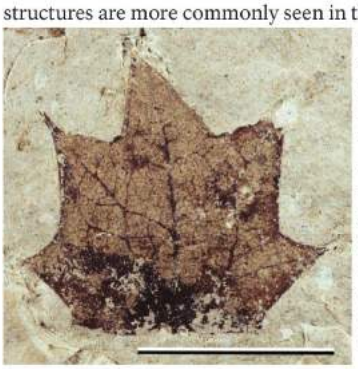
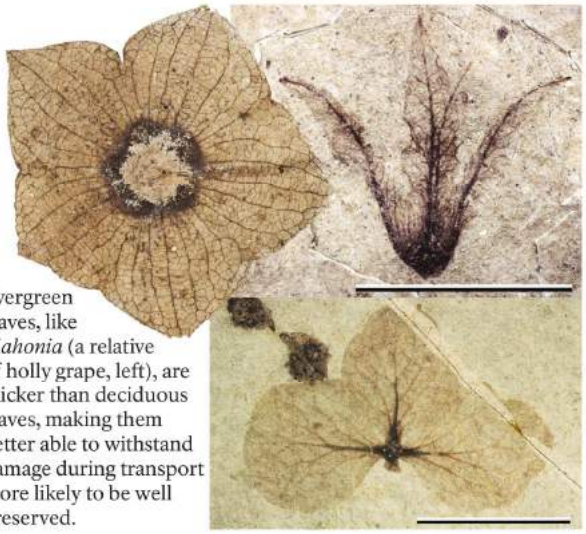
Why are fossil leaves so common?

Plants in the fossil record are unique in how certain organs are preserved preferentially. A plant organ is a part of a plant that has a specialized function. For example, leaves are considered organs because they are responsible for collecting sunlight for photosynthesis. Other plant organs include flowers, seeds, fruits, and stems.

Unlike animals, while a plant is alive it continually releases and regrows many of its organs. All plants, even evergreens, drop leaves. All plants release reproductive structures such as pollen, seeds, and fruit. This means that many isolated plant organs can be found in depositional environments like the bottom of Lake Florissant. Therefore, leaves and reproductive structures are more commonly seen in the fossil record than other plant parts that are not released from the plant during its life, such as the wood of a trunk or stem.



The durability of a plant organ also affects its fossilization. Certain leaves are more likely to reach a depositional environment intact than others.



Evergreen leaves, like *Mahonia* (a relative of holly grape, left), are thicker than deciduous leaves, making them better able to withstand damage during transport more likely to be well preserved.

Fossil fruits and flowers, like those of *Asterocarpinus*, *Florissantia*, and *Hydrangea* shown above, are rare at Florissant. This is because they are fragile and can fall apart easily before being buried.

Left: *Mahonia* (holly grape relative). Above, clockwise from top left: *Florissantia* flower (width 1 in, 2.6 cm), *Asterocarpinus* fruit, and *Hydrangea* flower. UCMP-3764, 3619, and 198424; YPM-23931.

What happened to the Eocene Florissant plants?

Immediately following the Eocene, global temperatures dropped, and the Florissant climate began to change from subtropical or warm temperate to cooler temperate. In response to the intense cooling, many plants native to the ecosystem that were not cold-adapted either became extinct or dispersed to other parts of the world.

The two most abundant plant fossils at Florissant, *Fagopsis*, a relative of beech, and *Cedrelospermum*, a relative of elm, became extinct.

The last living species of *Sequoia*, the coastal redwood, lives on the U.S. Pacific coast. *Koelreuteria* (golden rain tree) and *Ailanthus* (tree of heaven), pictured at left, are two types of trees widespread during the Eocene that now live only in Asia and Oceania.

Many genera present in Eocene Florissant survived under the colder conditions. These include plants which are still common across North America, including *Acer* (maple), *Rosa* (rose), *Carya* (hickory), and *Hydrangea*. *Pinus* and *Populus*, shown at right, have survived at Florissant and are abundant today as ponderosa pines (*Pinus ponderosa*) and quaking aspens (*Populus tremuloides*).

Above: left, *Koelreuteria* (golden rain tree); right, *Ailanthus* (tree of heaven). Right: *Pinus* (pine); far right: *Populus* (aspens, cottonwoods, and poplars). YPM-30055; UCMP-141996; FLFO-9362 and 3959.

Scale bars are 0.4 inch (1 cm).

Images courtesy of Florissant Fossil Beds National Monument (FLFO), University of California Museum of Paleontology (UCMP), and Yale Peabody Museum (YPM).

Number 5 of the geologic bulletin series, 2017. Download at www.nps.gov/flfo

Number 6 of the Geologic Bulletin Series, 2017 – Page 1

Florissant Fossil Beds

Fossil Insects

National Park Service
U.S. Department of the Interior

Florissant Fossil Beds
National Monument
Colorado

Relatives of insects were the first life forms to live on land, and today insects are the most numerous and diverse animals on the planet. Insects are rare as fossils, however. The Florissant fossil beds contain an exceptional diversity and abundance of fossil insects, including more than 1,500 different species.

Why study insects?

Three out of four kinds of animals are insects. There are twice as many species of flies (Diptera) as there are of all vertebrates (fishes, birds, reptiles, amphibians, and mammals). Insects live on every continent and play major roles in every ecosystem: they pollinate flowers, eat plants, decompose dead matter, and provide food for many other animals. Some insects spend part of their lifecycle as parasites, usually on other insects but occasionally on vertebrates. In order to understand and respond to issues in conservation biology, agriculture, and medicine, we need to know about the animals involved, and insects are some of the most important animals on earth!

Fossil insects show how ecosystems have changed and moved over time. By tracing living species back to their fossil ancestors, scientists can propose explanations for the diversity and geographic distribution of insect groups alive today.

"Fossil insects offer an extraordinary opportunity... throwing so much light on the evolution and migrations of insects, and therefore of prime importance for the understanding of the modern fauna."

T.D.A. Cockerell, 1937

Why are fossil insects so rare?

Most bodies decay, erode, or are scavenged before they can become fossils. Softer body material is more fragile, so it is less likely to preserve. Teeth and animals with a thick cuticle (hard covering) like beetles are more common as fossils than soft-bodied animals like spiders. Even the most fragile animals can fossilize, however. The gentle lake environment of Florissant in the late Eocene, 34 million years ago, led to the preservation of the delicate insects that lived then.

Fossil butterflies (Lepidoptera) are very rare. *Prodryas persephone* (top left, life size) is one of the best examples ever found. *Vanessa* (the painted lady), a close relative, still flies at Florissant (top right). Their caterpillars love to eat thistles like this native Colorado species (*Cirsium*) (bottom).

Are fossil insects the same species as living ones?

Almost all of the insect species found as fossils at Florissant became extinct in the 34 million years since they were buried. Descendants and relatives of these species survive today, however, and many still live in Colorado. Insects evolve more slowly than many other organisms do, and many Florissant fossil insects look nearly identical to their living relatives. Fossil insects from older deposits look more different.

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Flies help maintain balance in the environment. Some are scavengers who eat dead matter and recycle nutrients. Others, like this dance fly, are predators, which and keep prey species of insects from becoming too abundant. Still other flies pollinate flowers.

Dance fly
(Diptera: Empididae)
UCM-18637

Insects are the most numerous animal pollinators on Earth. Tens of thousands of species of beetles, wasps, flies, and other insects carry pollen among flowers. Bees pollinate three quarters of all fruits, nuts, and vegetables grown in the United States!

Sweat bee
(Hymenoptera: Halictidae)
UCM-78130

Scarab Beetle

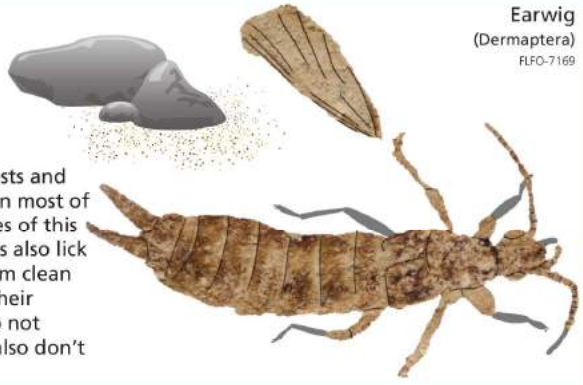
(Coleoptera: Scarabaeidae)
USNM-90441

Beetles are one of the most common insects found as fossils. Their thick, hard cuticle (outer covering) protects them in life from drying out or being attacked by predators. The cuticle also protects their bodies during fossilization.

Many insects, like this damselfly, live in water as larvae. Some are "indicator species," which only survive in conditions of high water quality. Biologists count the number and kind of insects and other invertebrates to monitor the health of streams and rivers.

FLFO-9764
Damselfly larva
(Odonata: Zygoptera)

Fossil insect pictures on this page are **four times larger than life size.**



Earwig
(Dermaptera)
FLFO-7169

Female earwigs dig nests and guard their offspring in most of the nearly 2,000 species of this group. Mother earwigs also lick their eggs to keep them clean of mold. Contrary to their name, these insects do not attack ears, and they also don't bite and can't sting.

Where can I see more fossil insects?

Anyone can access the database of photographs and records for the several thousand insect and plant fossils from Florissant that have been included in publications (web address at right). Also, Florissant Fossil Beds National Monument is a participating institution in the Fossil Insect Collaborative. This National Science Foundation sponsored group is adding tens of thousands of fossil insect records from Florissant and other locations to the Integrated Digitized Biocollections database (idigbio.org/portal).

Fossil Insect Collaborative website
iDigPaleo.org

Florissant Fossil Beds specimen database
planning.nps.gov/flfo/tax3_Search.cfm

Images courtesy of Florissant Fossil Beds National Monument (FLFO), Harvard Museum of Comparative Zoology (MCZ), Smithsonian National Museum of Natural History (USNM), University of Colorado Museum (UCM), and Yale Peabody Museum (YPM).