Newspaper and Visitor Guide

National Park Service
U.S. Department of the Interior

Petrified Forest

The Official Trip Planner of
Petrified Forest National Park


Painted Desert


Petrified wood


Painted Desert Inn


Pronghorn

Crossroad in Time

Best known for its vast deposits of petrified wood, Petrified Forest National Park is a crossroad in time. Today, the park is part of the Intermountain Basins semi-desert grassland. Winters are cold with a chance of snowstorms while summers are hot and thunderstorms bring the possibility of moisture during the monsoon season. Drought is common, sometimes lasting for years. While many visitors think that nothing can survive in what appears to be a barren place, hundreds of species of plants and animals live here. If you are lucky, you may see pronghorn along the park road, browsing among the shrubs, or hear the liquid song of a western meadowlark near an overlook.

The climate is very different than the environment represented by the Chinle Formation and its fossils. Beneath the veneer of the modern park, an ancient world waits to be discovered. Petrified wood is only one type of fossil found in the park. Fossilized remains of giant reptiles and amphibians, early dinosaurs, fish, ferns, cycads, and trees represent an entire ecosystem. Studying the layers of the colorful Chinle Formation, scientists continue to put together the story of the Late Triassic.

Archeologists also tell the story of the Petrified Forest through the clues left by past inhabitants, such as artifacts, remnants of villages, and evocative petroglyphs. The human story extends over 10,000 years. From ancient groups of hunter-gatherers to Route 66, this region has been a well traveled crossroad.

Enjoy ancient Petrified Forest, but don't forget that it is a living park as well. Take in the vast landscape from an overlook at the edge of the Painted Desert, walk a trail amidst the petrified logs, or merely sit and enjoy the silence of Petrified Forest, a crossroad in time.


Blue Mesa is one of the most intriguing areas of the park. Representing the blue part of the vast Painted Desert, the colorful layers of the Chinle Formation erode to reveal the Triassic treasure.

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Welcome!

Even in a region graced with so many wonderful national park areas, Petrified Forest National Park is a unique place. Along with the strange and beautiful Painted Desert, hundreds of archeological sites, a National Historic Landmark, stretches of native grassland, and one of the largest petrified wood deposits in the world, Petrified Forest also offers a chance for silence, solitude, and contemplation.

Most of our visitors concentrate along the overlooks and short trails of the 28-mile park road. In summer, our busiest season, parking areas are packed and facilities are crowded. Like many of the national parks, years of use have made an impact.

Fortunately, the concern and efforts of National Park employees, volunteers, and our visitors aid in the stewardship of Petrified Forest National Park. One of the biggest dangers our park faces is the illegal removal of park resources, particularly petrified wood. With the help of visitors, this selfish act can diminish.

Join us in preserving and protecting one of the most fascinating national parks. Walk the trails amidst ancient petrified logs, take in the wide vistas of the Painted Desert, discover voices of the past in the petroglyphs, listen to the silence of wilderness.

Enjoy the park!

Lee Baiza, Superintendent

National Park Service
U.S. Department of the Interior

Petrified Forest National Park
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Petrified Forest, AZ 86028

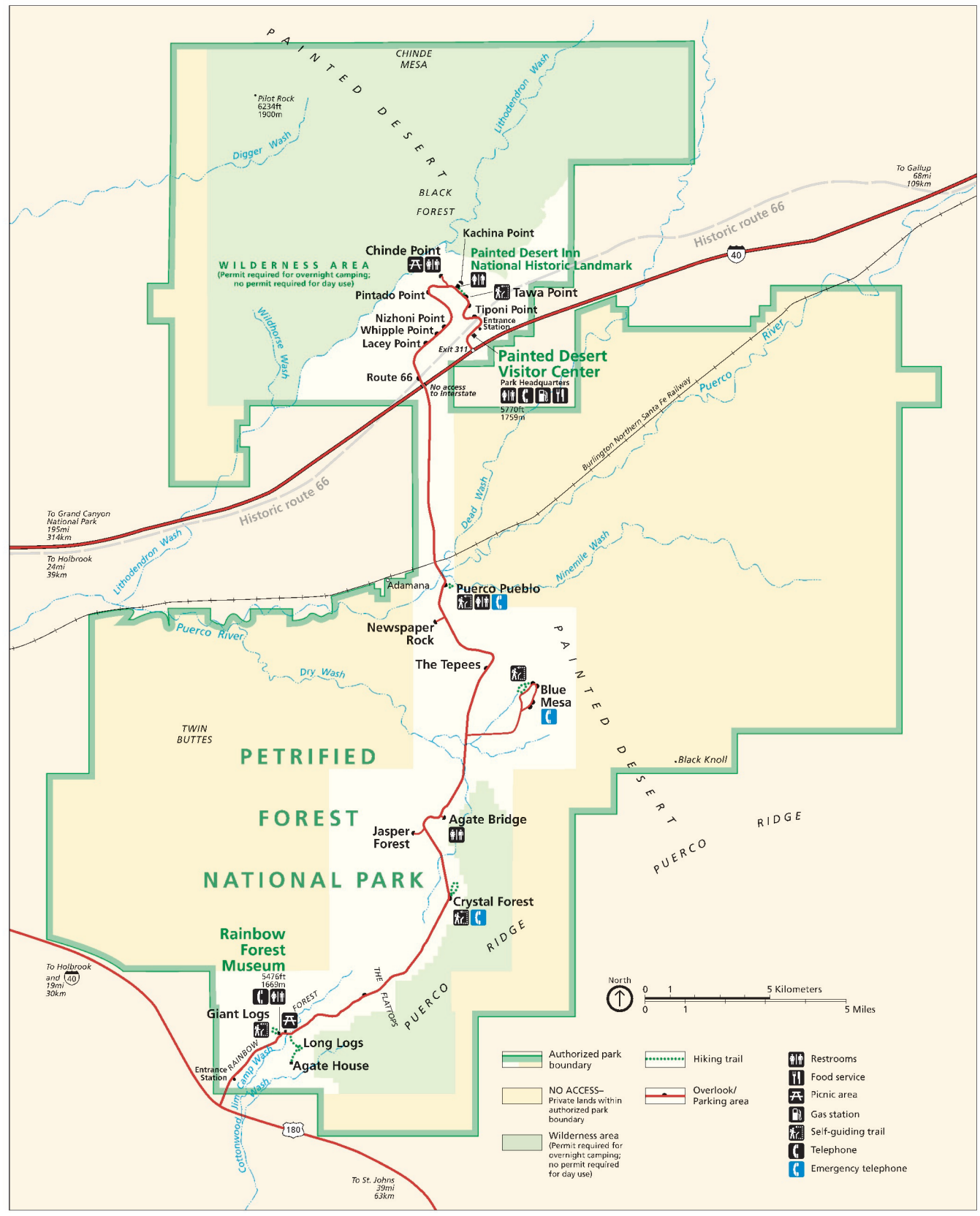
EXPERIENCE YOUR AMERICA


Ranger programs are available year-round

Park Map and Information

Park Regulations

- **Do not remove any natural or cultural object from the park, including fossils, rocks, animals, plants, artifacts, etc.**
- Vehicle travel is limited to the paved park road and park areas open to the public.
- Observe speed limit signs, which range between 15 and 45 miles per hour.
- Park or stop in designated areas. Do not stop in the middle of the road.
- Bicycles are permitted only on the paved park roads and parking areas open to the public. Bikes are not allowed off road at any time or on any trails.
- Pets must be leashed (no longer than 6 feet) and physically restrained at all times. Pets are not allowed in buildings, in designated Wilderness Area or on Wilderness Area access trail, except for service animals. Pets may be tied to an object for short periods of time (less than 5 min.) in developed areas or during emergencies. Clean up after your pet and deposit in trash receptacles!
- Do not litter, including cigarette butts. Use appropriate trash receptacles.
- Please recycle aluminum and plastic containers in the appropriate receptacles.
- Public use of the park is prohibited during closed hours except by permit.
- Camping in the park without a permit or outside of the Wilderness Area is prohibited.
- Do not climb on prehistoric or historic walls or other structures.
- Do not harm or remove any petroglyphs. Direct physical contact with any type of rock art is prohibited.
- Do not feed, touch, tease, frighten, harm, or disturb any animals in the park.
- Ground fires are prohibited. The use of solar, butane/propane, and white gas fueled stoves and charcoal grills are allowed in designated picnic areas.
- The consumption of alcohol or the presence of open alcoholic containers is prohibited, except in picnic areas.
- All vehicles, including buses, microbuses and vans, are prohibited from idling their engines for extended periods of time. Idling shall not exceed five minutes during periods of inclement weather and two minutes all other times.
- Firearms must be broken down, unloaded, cased, and stored in your vehicle. Carrying or use of firearms is prohibited.





Is this the Painted Desert or the Petrified Forest?
Both! The entire region, stretching over 1,500 square miles, is the Painted Desert. Petrified Forest National Park is within the Painted Desert and is located on both sides of Interstate 40.

Accessibility

Most rest rooms, visitor centers, and picnic areas are accessible or accessible with assistance for wheelchair users. Service animals are always welcome in the park!

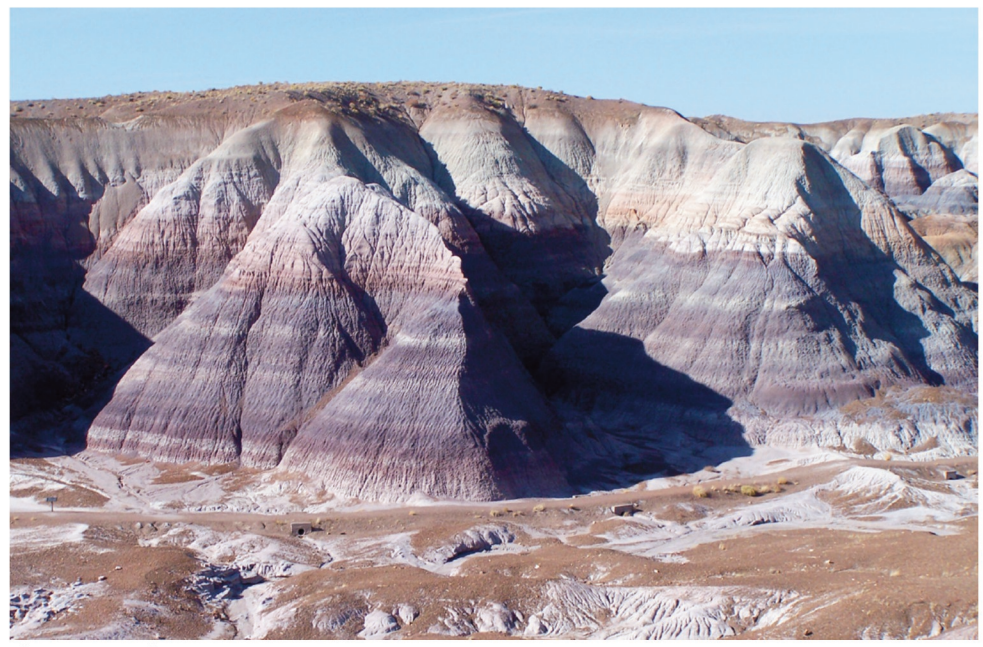
Trails at Petrified Forest National Park

Out of the Car and On the Trail

The best way to enjoy and experience Petrified Forest National Park is on foot. Designated trails range in length from less than a half-mile to three miles.

Stay on designated trails in developed hiking areas. Off-trail hiking damages the fragile grassland environment and disturbs wildlife habitat, creating unsightly "social" trails. Leaving the designated trail can also be hazardous for hikers due to loose rock and dangerous cliffs. Pets must be kept on leash at all times. Pets are not permitted in the park buildings, in Wilderness Area or on Wilderness access trails (except for service animals). Please clean up after your animal; use the trash receptacles. Bicycles are not allowed on trails or off roads at any time.

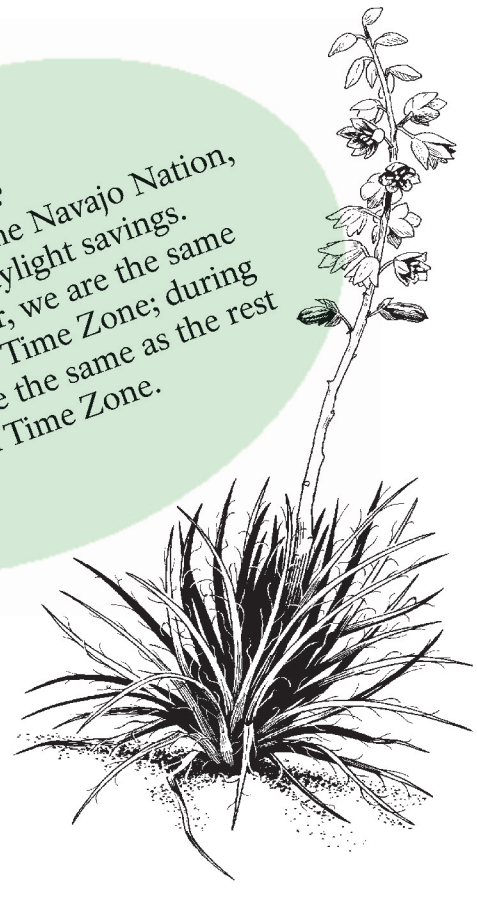
**Mile Markers begin at the park's northern entrance off of I-40.*



Blue Mesa Trail

Trail	Trailhead	Length	Description
Painted Desert Rim	Tawa and Kachina Points	1-mile round trip	This trail winds through the rim woodland, a place for chance encounters of many species of plants and animals. The view of the Painted Desert is spectacular. *Please do not harm animals or plants in the park.*
Puerco Pueblo	Puerco Pueblo parking lot	0.3-mile loop	Walk amidst the remains of a hundred room village, occupied by the ancestral Puebloan people between A.D. 1250 and 1400. *Do not climb on the boulders or walls. Please do not touch petroglyphs.*
Blue Mesa	Blue Mesa sunshelter	1-mile loop Moderately strenuous	Descending from the mesa, this trail loops among petrified wood deposits and badland hills of bluish bentonite clay. Plant fossils, including delicate ferns, have been found in the sedimentary layers of Blue Mesa. *Please leave them for others to enjoy.*
Crystal Forest	Crystal Forest parking lot	0.75-mile loop	Despite more than a century of collecting, a few beautiful crystals hide in the petrified logs of Crystal Forest. *Please leave the petrified wood for others to enjoy. Report anyone removing petrified wood from the park.*
Long Logs	Rainbow Forest parking area	1.6-mile loop	Long Logs is one of the largest concentrations of petrified wood in the park. Explore this ancient log jam at the base of gray badlands. *Do not climb on the badland hills.*
Agate House	Rainbow Forest parking area	2-miles round trip	Archeologists believe that this small pueblo was occupied for a short time about 700 years ago. Seasonal farmers or traders possibly built Agate House as a temporary home. *Long Logs and Agate House Trails can be combined, as they start from the same trail head, for a total of 3 miles round trip.*
Giant Logs *Trail guide available in the Museum*	Behind Rainbow Forest Museum	0.4-mile loop	Giant Logs features some of the largest and most colorful logs in the park. "Old Faithful", at the top of the trail, is almost ten feet across the base.

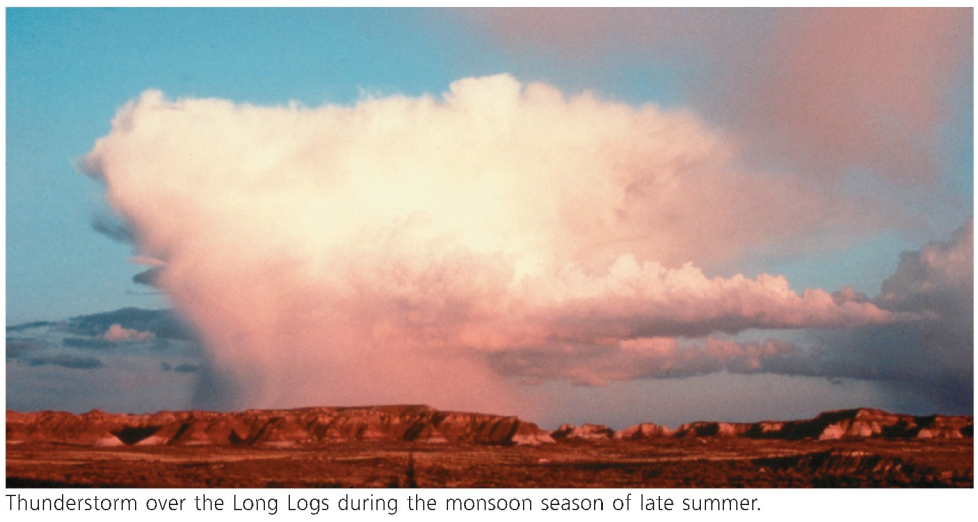
Is that the right time?
Arizona, except for the Navajo Nation, does not observe daylight savings. During the summer, we are the same time as the Pacific Time Zone; during the winter, we are the same as the rest of the Mountain Time Zone.



Safety

- Stay on the designated trails. Do not go beyond protective fencing or guardrails. Avoid cliff edges and steep slopes.
- Be aware of symptoms of high altitude sickness, including nausea, dizziness, headache, rapid heartbeat, and shortness of breath. Keep hydrated, rest, snack lightly, and avoid alcohol and cigarettes.
- Wear sunglasses with UV protection, a hat, and use sunscreen.
- The wild animals in the park can carry diseases including rabies, hanta virus, and plague. Do not handle or allow your pets near any live or dead animals and avoid nests and burrows.
- If you are injured or ill while visiting the park, contact a ranger at any visitor center facility.
- For Lost and Found, contact the Painted Desert Visitor Center, Rainbow Forest Museum, or call the park at (928) 524-6228.
- Yellow emergency phones are located at Puerco Pueblo, Blue Mesa, and Crystal Forest. The park number for emergency only is (928) 524-9726.

Activities at Petrified Forest National Park



Thunderstorm over the Long Logs during the monsoon season of late summer.

Points of Interest and Facilities

In order as seen from north to south

Painted Desert Visitor Center provides information, book sales, exhibits, and restrooms. A free orientation film is shown every half hour. A restaurant, gift shop, gas station, and convenience store are adjacent to the visitor center.

Tiponi, Tawa, Kachina, Chinde, Pintado, Nizhoni, Whipple, And Lacey Points are overlooks providing panoramic views of the Painted Desert.

Painted Desert Inn National Historic Landmark, located at Kachina Point, once served as a respite for travelers along historic Route 66. From the inn, you may view distant vistas and exhibits while touring this historic building.

Puerco Pueblo, a large archeological site, was occupied from A.D. 1250 to 1400. The pueblo has been partially excavated and a few of the room foundations stabilized.

Newspaper Rock has more than 650 petroglyphs adorning boulders that tumbled to rest below the cliffs. Due to defacement of these petroglyphs and unstable hillsides, the area is closed below the cliff. Free spotting scopes are available at the viewpoint.

Blue Mesa is an ideal setting to see the effect of erosion on badland hills. The one -way spur road leads to the mesa top, a four- mile round trip from the main park road.

Jasper Forest showcases bluffs which once encased the petrified wood now strewn across the valley floor.

Crystal Forest, Long Logs, Agate House, and Giant Logs are all trails that feature the many wonders of Petrified Forest. Refer to the Trails section (page 3) for more information.

Rainbow Forest Museum provides exhibits of petrified wood, fossils, and displays of prehistoric animals as well as information, book sales, and restrooms. A free orientation film is shown every half hour. A gift shop and a seasonal snack bar are located nearby.

Ranger Guided Programs

Ranger programs are available throughout the year. You probably won't be surprised that there are more programs available during our busy summer. There are three main programs:

Triassic Park: Discover the landscape of long ago and learn about the Late Triassic Epoch. Meet in the Rainbow Forest Museum sunroom. This will be either an easy Ranger-guided walk (with a few stairs) or a talk, depending on weather and interest.

Painted Desert Inn National Historic Landmark: Step back in time to learn about the inn's captivating history and architecture. Meet at the Painted Desert Inn National Historic Landmark for this easy Ranger-guided tour.

Puerco Pueblo: Explore this ancestral Puebloan village and discover petroglyphs along the trail. Meet at the Puerco Pueblo parking lot trailhead for this easy Ranger-guided walk.

Additional programs, activities, and events occur throughout the rest of the year. Be sure to call (928) 524-6228 for more information or check at one of the visitor facilities when you come to the park.



Exploring Petrified Forest

What can I see?

If you have one hour:

- Stop at the Painted Desert Visitor Center
- Drive through the park
- Stop at Kachina Point and Painted Desert Inn National Historic Landmark
- Visit Rainbow Forest Museum

If you have several hours *add*:

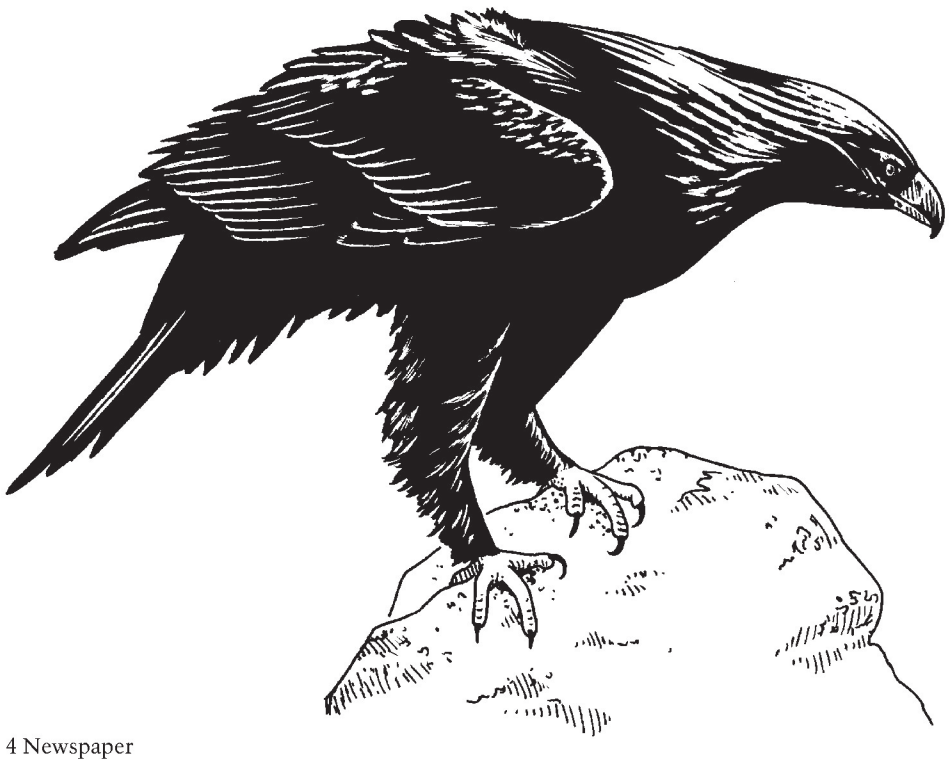
- See the park film at the Painted Desert Visitor Center or Rainbow Forest Museum
- Stop at Pintado Point, Newspaper Rock, and Jasper Forest
- Walk Puerco Pueblo Trail
- Drive Blue Mesa Road
- Walk Giant Logs Trail (pick up a trail guide in the Museum)

If you have half a day *add*:

- Walk more of the developed trails

If you have a day or more *add*:

- Hike into the one of the units of the Petrified Forest National Wilderness Area



What's Over There?

Paula wanted to find a quiet spot all her own to meditate. She saw the perfect place. It was just a dozen yards off-trail to the top of a sandstone outcrop, and she could take a picture with that really long petrified log in the foreground. Brian saw footprints an hour later, after Paula had gone, and wondered what there was to see from that vantage point. Kim did the same. By noon, 30 people had followed in Paula's footsteps. By the next day, over a hundred. The trail Paula accidentally cleared divided in half a large patch of microbiotic soil, a living crust that protects the precious topsoil. She had carved an eight-lane freeway through that miniature world and opened it to erosion. The nutrients and moisture retention of that delicate system was gone and the animals and plants that depended on it would suffer. Paula's meditation spot became a place of quiet destruction.

We each have made an effort to come and experience this place. It also takes the effort of every visitor to protect it. "Taking only pictures, leaving only footprints" is not enough in this landscape. Where there is a designated trail, regulations require that you leave your footprints only on the trail. In the Wilderness Areas, watch where you step and follow washes when possible. Together we can protect this fragile and fascinating region.

Wilderness at Petrified Forest National Park



North unit of the Petrified Forest National Wilderness Area

Wilderness Hiking and Camping

The Petrified Forest National Wilderness Area was one of the first two designated in the National Park System. What is wilderness? The concept is different for everyone. Artists may see shapes and color; backpackers anticipate an adventure; legislators define it in legal terms. In general, wilderness is a place where the human imprint is minimal. In 1964 Congress passed the Wilderness Act, restricting grazing, mining, timber cutting and mechanized vehicles in these areas. Wilderness Areas are protected and valued for their ecological, historical, scientific and experiential resources. The Petrified Forest Wilderness Area consists of over 50,000 acres of mesas, buttes, badlands, and scattered areas of grasslands.

No permits are required for day hiking. Wilderness hiking offers the opportunity to visit sites seldom seen by most park visitors. There are no developed trails; hiking is cross-country. Clear air, sparse vegetation, and a variety of landmarks combine to make hiking conditions excellent. Be prepared! There is no water and little shade in the backcountry. A gallon of water per person per day is recommended in summer months. Day hikers must be back at their vehicles by the park's posted closing time.

There are two units in the **Petrified Forest National Wilderness Area**. The **Painted Desert unit** is at the north end of the park, accessed from Kachina Point. The trailhead can be found on the northwest side of the Painted Desert Inn National Historic Landmark. Campers must hike at least one linear mile from the trailhead at Kachina Point or north of the Lithodendron Wash. The **Rainbow Forest unit** is at the south end of the park, accessed from the parking area at mile marker 24 south of the Flattops. In the Rainbow Forest unit, campers must hike at least a half mile southeast of the main park road near the Flattops. There are no maintained campsites in the wilderness areas.

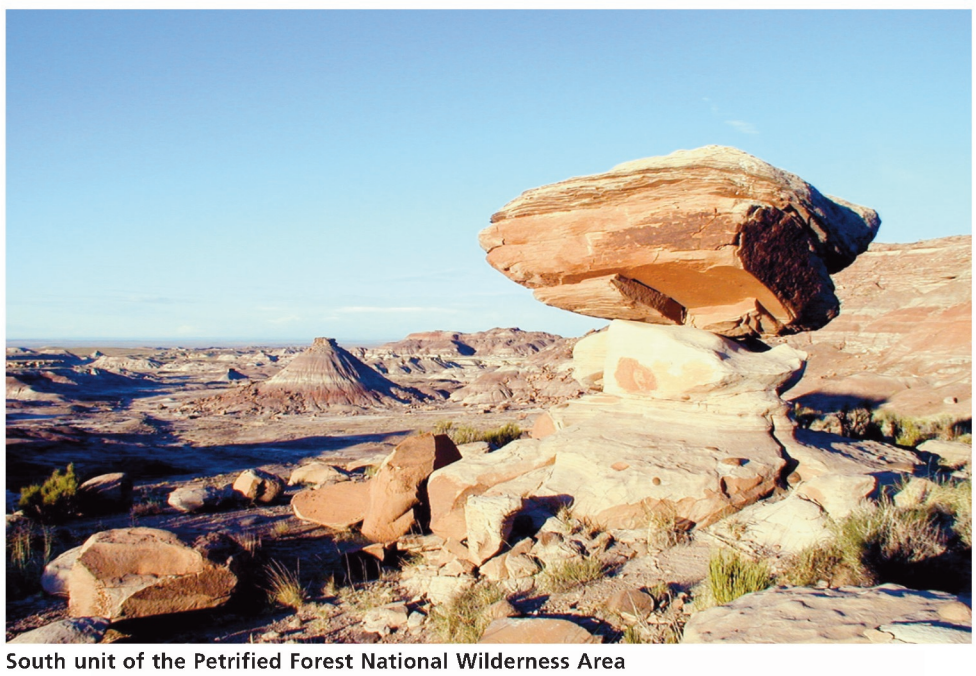
Horseback riding and pack animals are permitted in the wilderness. All information and regulations contained in this article pertain to horse use in the wilderness.

A permit for backcountry camping may be obtained for a maximum of 14 consecutive days. The campsite must be relocated every three days to minimize impacts on the resource. Camping is allowed for not more than a total of 30 days in any calendar year park -wide. All permit applicants must read and sign the permit conditions sheet before being issued a permit.

<u>Regulations:</u>

- Collection of plants, rocks, petrified wood, fossils, archeological objects or other materials is illegal everywhere in the park.
- No bicycles, motorized vehicles, firearms, or pets are allowed in the Wilderness Area.
- Camping in the park without a permit is prohibited.
- Group size for staying in the Wilderness Area overnight is limited to eight (8) person per group. Use of campsites is limited to eight (8) persons.
- No wood or charcoal fires are allowed (use fuel stoves). The use of solar, propane/butane, and white gas fueled stoves is allowed in wilderness camping areas. Charcoal fires are not allowed in wilderness camping areas.
- Bury human waste. Pack out your trash.





South unit of the Petrified Forest National Wilderness Area

Where can I watch the sunset over the Painted Desert without backpacking?
The Painted Desert stretches from St. Johns to Cameron, covering about 1,500 square miles. There are many places to watch the sunset outside of the park. One site to visit is the Little Painted Desert County Park, north of Winslow on Highway 87.

Horseback Riding and Pack Animals

The park offers diverse riding and packing opportunities in the Petrified Forest National Wilderness Area. Animals designated as pack animals are horses, burros, mules, and llamas.

- When using parking areas, please leave room for other visitors to park.
- Park your trailer so that it does not interfere with vehicle traffic flow.
- Follow all park regulations.
- Clean up after horses in improved areas (parking lots, paved areas, etc).
- All food and water must be packed in. Feed must be certified weed-free.
- Do not leave horses unattended, to prevent encounters with other park visitors. Free-trailing or loose-herding is not permitted. Horses are prohibited on paved trails, paved roads and around visitor use areas.
- Water for horses may be obtained at the service station by the Painted Desert Visitor Center. No water is available in the wilderness areas.
- Animals are limited to six (6) per group.

The trail down to the northern unit of the Wilderness Area can be very steep with an unstable surface. While there are no maintained trails in the wilderness areas, there is very little grade change and riding is easy. Petrified wood is sharp and can cause damage to stock hooves. Take care of yourself, your stock, and your park.

Special Events and Area Information

Annual Special Events

January — *Pony Express Ride:* send a letter by Pony Express from Petrified Forest National Park

February — *National Invasive Weed Week,* February 25-March 2, 2007 and February 24-29, 2008

March — *Arizona Archaeology and Heritage Awareness Month*

April — *National Park Week,* April 22-29, 2007 and April 20-27, 2008

Navajo County Schools Fair at county fairgrounds in Holbrook.

May — *National Preservation Month*

National Wildflower Week, May 7-13, 2007 and May 5-11, 2008

International Migratory Bird Day, May 12, 2007 and May 10, 2008

International Museum Day, May 18

Memorial Day, observed last Monday of May

Summer — *Cultural Demonstrators:* Most Saturdays through the summer, visit with silversmiths, dancers, weavers and other demonstrators, many with items for sale.

June — *Summer Solstice,* June 21: June 14-28, join rangers at a petroglyph at Puerco Pueblo for a solar interaction between 8 am and 10 am.

National Trails Day, June 2, 2007 and June 7, 2008

August — *Founders Day:* anniversary of the establishment of the National Park Service, August 25

September — *National Public Lands Day:* September 29, 2007 and September 27, 2008

Navajo County Fair: county fairgrounds in Holbrook.

October — *Earth Science Week,* October 7-13, 2007 and October 5-1, 2008

Ghosts of the Past: weekend evening close to Halloween, visit the ghosts of the Petrified Forest for this evening ranger tour. Place and time will be posted on the park website and at the visitor facilities closer to the event .

November — *National American Indian Heritage Month*

Veterans Day, November 11

December — *Parade of Lights*, first Saturday in December in Holbrook.

Petrified Forest's Anniversary, December 8



Archaeology Expo



Off the Beaten path programs: find fossils with the park paleontologist

Learning Center

Petrified Forest is a living laboratory for many fields. The Petrified Forest National Park Learning Center offers a chance for park visitors, employees, and researchers to get together—a time for better understanding and appreciation of the natural and cultural resources of the park and region. Lectures are held on a regular basis. Topics including geology, paleontology, archeology, and biology. Join us to discover Petrified Forest's many facets! For more information contact the park or stop by the visitor facilities.



Evening program



Navajo County Fair



Cultural demonstrations: Hopi pottery



The Painted Desert

Area Information

Hours of Operation

Summer hours are 7 am to 7 pm MST. Winter hours are 8 am to 5 pm MST. There are transitional hours of operation during spring and fall.

Picnic areas are available at Chinde Point and Rainbow Forest.

Lodging and Camping

The park does not provide any lodging facilities and camping is limited to backpacking into the Wilderness Area. Nearby communities, national forests, and state parks have a variety of motels and camping offerings. For information call:

Gallup Chamber of Commerce
505-722-2228

Holbrook Chamber of Commerce
928-524-6558 or 800-524-2459

Winslow Chamber of Commerce
928-289-2434

For road conditions call:
Arizona 1-888-411-7623 or 511
New Mexico 1-800-432-4269

National Park Service

Petrified Forest National Park

Mailing Address
Petrified Forest National Park
P.O. Box 2217
Petrified Forest, AZ 86028

E-mail
PEFO_Superintendent@nps.gov

Fax Number
(928) 524-3567

Park Headquarters
(928) 524-6228

Website
http://www.nps.gov/pefo

The National Park Service cares for special places saved by the American people so that all may experience our heritage.

Junior Ranger Program

Who are Junior Rangers? They are kids of any age who take the time to learn about our national parks and help educate friends and family about these special places. After completing required activities, kids take an oath, promising to help protect and preserve Petrified Forest, and receive a Junior Ranger badge. Would you like to become a Junior Ranger? Stop by the Painted Desert Visitor Center, Painted Desert Inn, or Rainbow Forest Museum and ask for a Junior Ranger activity booklet.

We invite YOU to become a member of this very special group of people. Help protect our national parks. Join the team—become a Petrified Forest National Park Junior Ranger!

What kind of wildlife will we see?
Some visitors never see any animals in the park. There are actually hundreds of species! Many of animals only come out at night or migrate. Others are camouflaged to blend into the environment, so watch carefully! Some of the most common animals include ravens, pronghorn, desert cottontail rabbits, collared lizards, and bull snakes.



Students participate in curriculum-based programs at the park.

Education Programs

Educators! Bring your students to Petrified Forest National Park for a curriculum-based program or pre-arranged ranger program. The park has endeavored to provide motivating educational opportunities for students while meeting the Arizona Science and Math Essential Skills. We are always delighted to have classes visit the park with the desire to learn more about this extraordinary place.



Petrified Forest offers:

- Curriculum-based programs on paleontology and archeology
- Pre -arranged ranger program for your school group
- In-class programs, when a ranger brings the park to your students

For information write to: Education Technician, Petrified Forest National Park, P.O. Box 2217, Petrified Forest, AZ 86028
Call: the Education Technician at (928) 524-6228
E-mail: PEFO_Superintendent@nps.gov

Some images in this and other park publications were created through the use of equipment made possible by a grant from the National Park Foundation through the generous support of Kodak, a Proud Partner of America's National Parks.

What is the difference between a mesa and a butte?
A mesa is a flat-topped landform with steep sides, typically wider than it is tall. A butte can also be flat-topped, but is taller than it is wide. A butte can erode from a mesa.

Volunteers—Very Important People

Have you read the headlines lately? *Vandals Destroy Petroglyphs—Fossils are Stolen From Park—Petrified Wood Theft Continues*. This is what is happening on our public lands, lands set aside for everyone to enjoy. How can an interested person help deter the increasing damage to our cherished lands? Become a volunteer at Petrified Forest National Park!

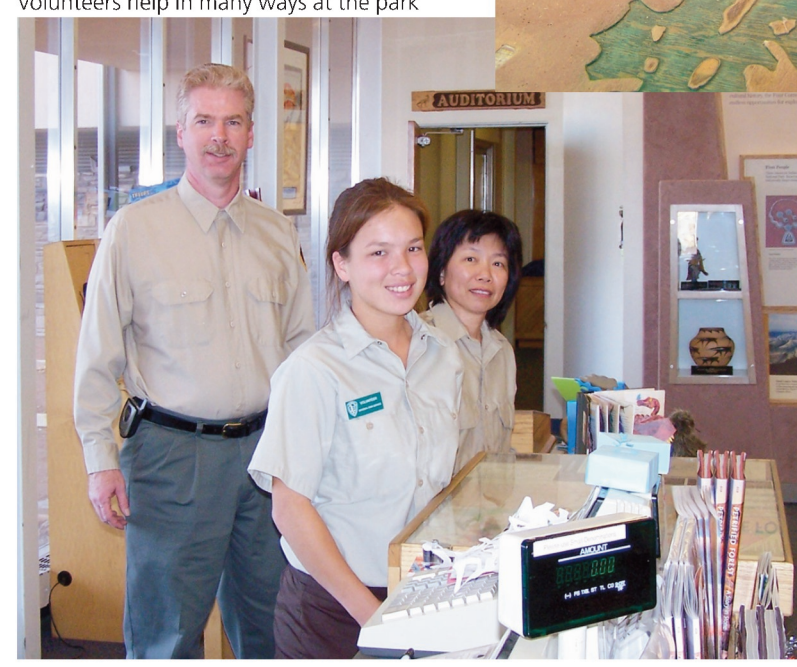
Volunteers receive training about the park, including the fascinating scientific discoveries being made here and the problems in protecting our parks. Volunteers may work directly with the public at visitor centers, rove trails, aid researchers, or delve into the park collection with our museum curator. Volunteers are an important part of the National Park Service team.

Our volunteers are, without a doubt, Very Important People! Last year, nearly 150,000 volunteers donated 5 million hours of their time to national parks. The national parks belong to all of us and they need our protection. No one else will do it for us. If you care, please join us as a VIP, Volunteer- In - Park. Learn something wonderful, meet new people, and make a difference.

For information write to: Volunteer Coordinator, Petrified Forest National Park, P.O. Box 2217, Petrified Forest, AZ 86028
Call: the Volunteer Coordinator at (928) 524-6228
E-mail: PEFO_Superintendent@nps.gov



Volunteers help in many ways at the park





Petrified logs in the snow.

Petrified Forest Museum Association

Promoting Interpretive and Educational Programs

Promoting Scientific Research and Resource Understanding

Producing Park-Specific Publications and Materials

Preparing the park for Future Generations

Become a Member of the Petrified Forest Museum Association!



MEMBERSHIP BENEFITS...
An initial 20% discount on anything purchased along with the membership

15% discount at all Petrified Forest Museum Association bookstores

10-20% discount at other national park bookstores around the country

ADDED BENEFITS...
INDIVIDUAL members receive *Petrified Forest: A Story In Stone.*

FAMILY members also receive our video *Timeless Impressions.*

SUPPORTING members receive the premium items of the previous membership levels, plus the PFMA publication *Tapamveni: Rock Art of the Southwest.*

CONTRIBUTING members receive the premium items of the previous membership levels, plus three PFMA puzzles.

STEWARD members receive the premium items of the previous membership levels, plus additional premium items.

LIFETIME members receive all current PFMA publications and all new PFMA publications annually.

BENEFACTOR members receive all the benefits of the Lifetime Membership Plus an appreciation plaque for their contribution to our efforts at Petrified Forest National Park.

Contact: (928) 524-6228 x239
Email: pfmabookstore@cybertrails.com

Climatic Averages for Petrified Forest (based on a fifty year period)

Month	Average Max Temperature	Average Min Temperature	Average Daily Precipitation	Average Monthly Precipitation
Jan	47.5	21	0.018	0.571
Feb	54	25	0.018	0.521
March	61	29	0.0195	0.606
April	70	35	0.012	0.371
May	79	43	0.014	0.446
June	89	52	0.012	0.348
July	92	60	0.042	1.311
Aug	89	59	0.056	1.744
Sept	83.5	52	0.041	1.227
Oct	72	40	0.032	1.001
Nov	58.5	37	0.022	0.672
Dec	48	21	0.022	0.679
Total	-	-	-	9.497

Fees and Passes

Petrified Forest Entrance Fees
$20 annual pass to Petrified Forest
$10 per private vehicle for a seven-day pass
$5 Bicycles, pedestrians, motorcycle, and non-commercial bus passenger



National Parks and Federal Recreational Lands Pass Program
This new pass program replaces the National Park Pass and Golden Eagle, Golden Age, and Golden Access Passports. Beginning January 1, 2007, there will be a number of pass options for the public to use at Federal recreation sites where entrance or standard amenity fees are charged. Passes admit the pass holder/s and passengers in a non-commercial vehicle at per vehicle fee areas, not to exceed 4 adults at per person fee areas. Children under 16 are free. Both the Senior and Access Passes provide a 50% discount for some fees, such as camping, swimming, boat launch, and specialized interpretive services.

Annual Pass – $80: can be obtained in person at the park, by calling 1-888-ASK USGS, Ext. 1, or via the Internet at http://store.usgs.gov/pass.

Senior Pass – $10: lifetime for U.S. citizens or permanent residents age 62 or over. The pass can only be obtained in person at the park.

Access Pass – Free: lifetime for U.S. citizens or permanent residents with permanent disabilities. Acceptable documentation is required to obtain the pass. The pass can only be obtained in person at the park.

Volunteer Pass – Free: for volunteers acquiring 500 service hours on a cumulative basis.

All National Parks Passes, Golden Eagle, Golden Eagle Hologram, Golden Access and Golden Age Passports will continue to be honored according to the provisions of the pass. Only paper Golden Age and Access Passports may be exchanged free of charge for new plastic passes.

Name_____

Address_____

City_____State____Zip_____

Credit Card #_____Expiration_____

Phone(_____)_____

Mail To: Petrified Forest Museum Association
Park Rd. 1 - P.O. Box 2277
Petrified Forest, AZ 86028

Individual	$25.00
Family	$35.00
Supporting	$50.00
Contributing	$100.00
Steward	$250.00
Lifetime	$1000.00
Benefactor	$5000.00




Fossil crayfish


Phytosaur skull


Fossil leaf


Petrified wood cross-section

Paleontology of Petrified Forest National Park

What is Paleontology?

Paleontology is the scientific study of ancient life. Through the examination of fossils and the rocks in which they are found, paleontologists reconstruct the past. Paleontology is concerned with all aspects of the biology of ancient life forms: their shape and structure, patterns of change, taxonomic relationships with each other and with modern living species, geographic distribution and more.

Paleontology is divided into various subdisciplines, including:

Micropaleontology: study of generally microscopic fossils.

Paleobotany: study of fossil plants, including the study of fossil algae and fungi in addition to land plants.

Palynology: study of pollen and spores, both living and fossil, produced by land plants and protists.

Invertebrate Paleontology: study of invertebrate animal fossils, such as mollusks, echinoderms, insects, and others.

Vertebrate Paleontology: study of vertebrate fossils, from primitive fishes to mammals.

Human Paleontology (Paleoanthropology): study of prehistoric human and proto-human fossils.

Taphonomy: study of the processes of decay, preservation, and the formation of fossils in general.

Ichnology: study of fossil tracks, trails, footprints, and other trace fossils.

Paleoecology: study of the ecology and climate of the past, as revealed both by fossils and by other methods.

Paleontologists are the private eye of the scientific world, piecing together clues to a distant past. This science incorporates knowledge from biology, geology, ecology, anthropology, archeology, and even computer science to understand the processes of life through time. Paleontology is a rich field, imbued with a long and interesting past and an even more intriguing and hopeful future.



Southwest in the Late Triassic Epoch. (Ron Blakey)


Coelophysis beneath the Late Triassic Epoch canopy. (Doug Henderson)

The Park in the Past

As you drive through the park, you might see blossoming prickly pear cacti, dashing black-tailed jackrabbits, or a soaring redtail hawk. But what would you have seen if you were here during the Late Triassic Epoch?

From the fossils and sedimentary rocks of the Painted Desert, we know that this was a much wetter environment during the Late Triassic. More than 200 million years ago, this region was located not far from the equator as part of the supercontinent Pangaea. Many researchers believe that it was a tropical landscape, dominated by a great river system as large and complex as the modern Mississippi or Amazon. Many tributaries flowed toward the main river, the water eventually making its way towards the coast. Galleries of trees grew along the waterways as well as horsetails and ferns. Other species of plants grew nearby. During rainy seasons, the rivers would swell, carrying debris such as logs, large cobbles, and even dead animals. As the waters subsided, debris was left on sandbars and along the waterways to be covered with more sediment as time passed. Dead animals, plants, and logs rotted away or became fossilized, remaining to tell the story of their environment.

As you walk the trails, imagine your feet sinking down into soft mud, perhaps feeling the swirl of water against your legs. Smell the humid, green odors of growth and decay. What was that splash? Perhaps a crocodile-like phytosaur?



Petrified Forest's Paleontological Collections

Imagine a place that holds some of Earth's secrets from millions of years ago. This place is found within the paleontological collections of the Petrified Forest National Park Museum Collection. More than 17,000 paleontological specimens and objects stored at the park represent the paleobotanical, vertebrate, invertebrate, and trace fossil materials found at the park, including more than 70 type specimens (the original specimens used when a new species of plant or animal was first described to science). Whether it's petrified wood or jasperized freshwater mollusks, the collection provides us with a glimpse of what this region was like over 200 million years ago. The Chinle Formation (the main geological formation of the park) is filled with fossil materials that have provided the basis for in-depth study of the Late Triassic and a legacy of research that continues to draw scientists from all over the world to study the paleontological resources of the park.

Due to the importance of the collection and to help researchers study it properly, the park's Resource Management staff has several projects underway, involving the organization/cataloguing of important research documentation and the curation of museum specimens. On the National Park Service's website for museum collections (http://www.museum.nps.gov) a portion of the Petrified Forest's fossil collections is arranged by scientific name. Detailed information and images are also located at this site. The collection provides a window of discovery into the Late Triassic Epoch of our world's natural history—its flora, fauna, and geology, an aid to understanding and education among researchers, park staff, and park visitors.

For more information please contact: the Museum Curator at (928) 524-6228



Scott Williams, Museum Curator, with phytosaur skull

Paleontology at Petrified Forest National Park



Landscape in the Late Triassic Epoch. (Doug Henderson)

Trees to Stone

Petrified Forest is a popular stop for visitors traveling through northern Arizona. Each year half a million visitors are drawn by the allure of a forest turned to stone. Huge petrified logs are strewn across the terrain. How did these majestic trees, that once grew up to 200 feet tall and 10 feet in diameter, become so perfectly preserved? The phenomenon is still not completely understood, but scientists have reached a basic understanding of this astounding scientific process.

In the distant past, after trees fell over from natural causes such as old age, flooding, or lightning, they were carried downriver, settling on sand bars and creating log jams. The trees were buried under deposits of sediment, slowing down the process of decay due to the scarcity of oxygen. Silica-rich ash, spewed from distant volcanoes, was mixed into the sediment. The silica dissolved into groundwater and the solution seeped into the cells of the buried trees. Crystals formed within spaces in the logs, including hollows, cracks and the interior of the cells. The wood tissue degraded, partially or fully replaced by minerals, leaving behind beautiful fossils.

Petrified Forest National Park boasts some of the most colorful and abundant petrified wood in the world. As you walk the trails of Giant Logs, Crystal Forest, or Long Logs, take time to appreciate these amazing relics of the past. Due to the fossilization of these trees and other plants and animals we are able to travel back through time more than 200 million years and understand what that ancient environment must have been like.

From Discovery to Display

Petrified Forest National Park holds a variety of different interests for visitors. Fossils and the reconstruction of those fossils are one of the main interests of the park. The scientists who search for and discover these links to the past are known as paleontologists. Many hours of hard work are put into a single fossil before it is ever seen in a display.

It all begins with the activity of prospecting, searching for a site with fossils that can be excavated. The search requires hiking through the badlands of the park for long periods of time, usually in the heat of summer, until a fossil is discovered. Then the slow, careful process of excavating the remains begins. Typically, a fossil is left in the rock material in which it is encased. Everything is wrapped up in strips of burlap that have been soaked in plaster. Once the plaster hardens the entire mass can be moved safely from the site to a preparation laboratory.

In the fossil preperation lab, workers begin removing the plaster jacket surrounding the fossil material. With special tools, such as miniature jackhammers that run on air, the bone is extracted from the surrounding rock. This is often the most time consuming part of the entire process.

Once the bone is completely removed and cleaned it may be placed inside of a special display case. The display case is then presented to the public for all to enjoy! Be sure to visit the Rainbow Forest Museum to see a selection of the fossils discovered in Petrified Forest National Park.



Paleontologist Bill Parker at a fossil excavation

Ancient Insects

The important role of insects and other small arthropods in the Late Triassic ecosystem is often overlooked because their actual fossilized remains are very rare. There is much indirect evidence of their existence and activities preserved in the plant fossils of the park. This evidence takes several forms and shows that a considerable variety of insects were present and interacting with the plants.

Most evidence of interaction is related to the use of plants for food. For example, bite marks are present at various places on some leaves. Evidently the leaves were still alive when they were attacked because a rim of callous tissue occurs along the edges of the incisions and shows that the leaves survived at least long enough for the wounds to heal. Many of the logs exposed in the park have marks on them indicating their use as food by insects. It appears that in most cases the grazing occurred after the trees died because the wounds do not show signs of healing. The most common evidence of this type consists of channels and channel fillings on the exterior of the trunks, which were formed between the wood and bark. Some



Triassic beetle borings are trace fossils

logs contain small, simple borings of different sizes, orientation, and distribution. Beetles were probably responsible for all of these types of feeding traces.

In addition to utilizing plants for food, some of the arthropods used them for shelter and to assist in reproduction. Swellings on leaves of one species (called galls) were evidently used for shelter by mites. The evidence that plants played a role in the reproduction of insects is small elliptical scars on the stems of some of the herbaceous plants that occur in the Chinle. These scars probably were formed when dragonflies laid their eggs in the soft tissue of the stems.

Comparing fossil evidence from Petrified Forest's ancient past with modern ecosystems shows that the battle between insects and plants has changed little over millions of years.



Cynepteris lasiophora (fern)

Laccopteris smithii (fern)

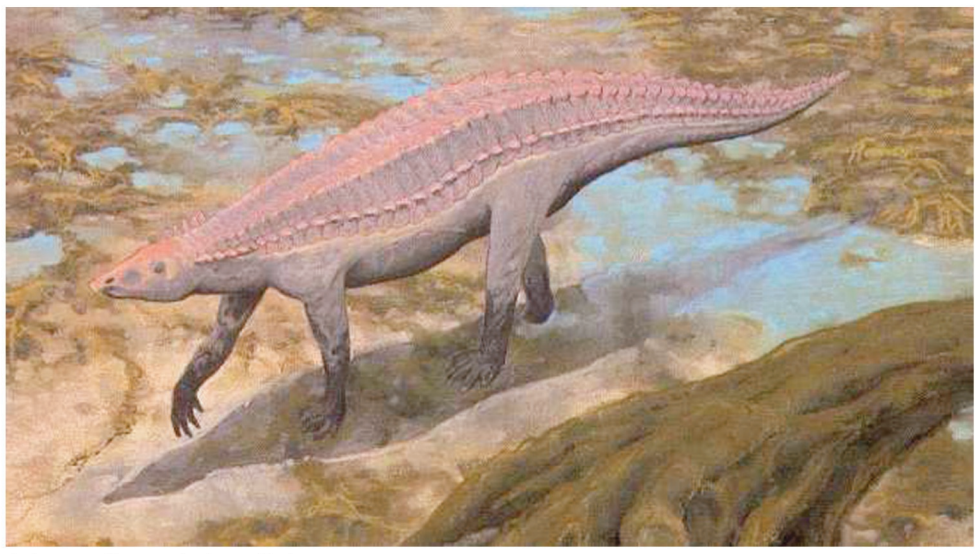
Beyond the Trees

Although Petrified Forest National Park was originally established to protect the large deposits of petrified wood, the park also contains an amazing variety of other plant fossils. Research has shown that these fossils include leaves, cones, small stems, seeds, pollen, and spores, representing most groups of living plants except for the flowering plants. In spite of 150 years of study, the flora is still not completely known. New species are continually being discovered.

Plant fossils found in Petrified Forest National Park occur in the Chinle Formation, which is Late Triassic in age, more than 200 million years old. This part of Arizona was relatively close to the equator when the Chinle Formation was being deposited. The remains of plants that generally thrive in a warm, moist climate are some of the most common plant fossils in the park. Some species are closely related to certain plants that currently live in southeastern Asia where there is an abundance of rainfall. Such plants include several of the ferns with fairly large delicate leaves. The park's fossil horsetails have stems ranging up to about one foot in diameter, probably standing as tall as 20-30 feet. Another group of tropical plants commonly found in the park is the cycads and their extinct relatives the bennettitales that have large showy leaves and short thick stout stems. Practically the only coniferous fossils found in the park are the large petrified trunks.

Perhaps as many as one third of the species described from the park are not closely related to any group of living plants except in general terms. Still, the flora would not seem too alien if one could go back in time and visit the area of the park over 200 million years ago.

Paleontology at Petrified Forest National Park



Aetosaur *Stagonolepis wellesi*

Ancient Denizens of Petrified Forest

Animals, large and small, left behind clues to their existence in the form of body fossils and trace fossils. Fossil clams and snails can be found scattered through the park's geological layers. Tracks in the Tepees area of the park are believed to have been made by horseshoe crabs. Still more delicate remains have been found in the thin slabs of shale, such as shrimp, crayfish, and insects—even the wing of a cockroach! The freshwater streams and rivers of the Triassic landscape teemed with fish, especially sharks (such as *Lonchidion* and "*Xenacanthus*") and lungfish.

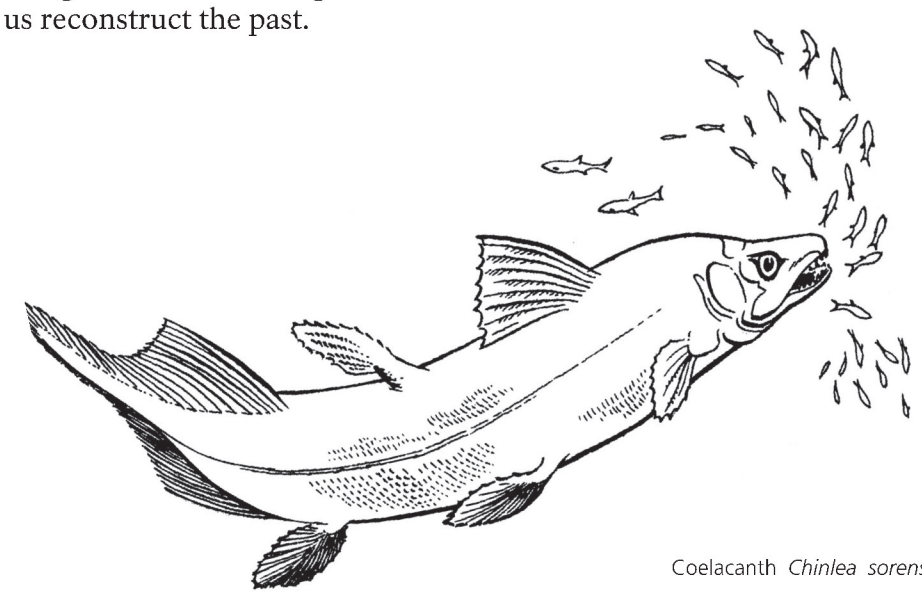
Fish were probably one of the favorite foods of *Koskinonodon* (formally known as *Buettneria*), one of most common animals discovered in the older strata of the park. With their flat heads and upward-directed eyes, these giant amphibians may have settled in the muddy bottom of ponds, like giant salamanders, and ambushed prey from below. In the younger layers of the park, *Koskinonodon* is replaced by a smaller yet similar animal named *Apachesaurus*.

Archosaurs, a specialized group that includes modern birds and crocodiles, were represented in the Triassic by aetosaurs, phytosaurs, and rauisuchians (collectively known as pseudosuchians) and dinosaurs. Similar in appearance and distantly related to crocodiles, phytosaurs (Parasuchians) probably filled similar ecological niches. Phytosaurs are the most common fossil animal found in the park. Aetosaurs (Stagonolepidids) were large omnivorous archosaurs characterized by a bony carapace of rectangular armor plates. The armor was most likely for defense against predators such as rauisuchians and phytosaurs. Rauisuchians bear a resemblance to meat-eating dinosaurs, although they were actually crocodilians. These carnivores were probably the top terrestrial predators.

Most visitors to the park are surprised to learn that dinosaurs, relatively rare and minor components of the Triassic fauna preserved at the park. Separated from other archosaurs by characters of the pelvis and ankle, Late Triassic dinosaurs were mainly small, bipedal carnivorous predators including *Coelophysis* and the primitive *Chindesaurus*. To date, no remains of ornithischian (herbivorous) dinosaurs have been found in the park.

Another group living in the Triassic, the therapsids were large reptiles that possessed many mammalian characters including a "cheek" bone, enlarged canine teeth, specialized pelvis, and the attachment of the skull to the spine. *Placerias* is a large dicynodont therapsid known from isolated elements in the park but common elsewhere in Arizona, especially near St. Johns, southeast of the park, where large numbers of *Placerias* were found in a single quarry.

Fossils animals of the Triassic are as diverse and fascinating as the park's living fauna. Paleontologists continue to make new discoveries that help us reconstruct the past.



Coelacanth *Chinlea sorenseni*

Recent Paleontological Research

Since the summer of 2001 Petrified Forest has seen significant strides in paleontological research, including relocated and documenting all known paleontological sites in the park. In the last 80 years, over 200 fossil sites have been documented, more than half of which have been relocated and documented recently, and over 50 new sites have been discovered.



Protecting fossils at the dig

From 2001 to 2003, substantial finds in the park included a partial skeleton of aetosaur *Stagonolepis wellesi*, armor plates from a new species of aetosaur, a partial skeleton of the crocodylomorph *Parrishia*, a complete phytosaur skull probably belonging to the species *Leptosuchus crosbiensis*, armor plates from aetosaur *"Desmatosuchus" chamaensis*, the first recorded jaw material of *Trilophosaurus* from the park (probably a new species), and a partial skeleton of the rare fossil reptile *Vancleavea*.

The 2004 and 2005 seasons provided the best new fossil material to date. Excavations at the *Revueltosaurus* Quarry revealed at least a dozen skeletons of the *Revueltosaurus callenderi*. This is an important find. *Revueltosaurus* was previously only known from the teeth and was believed to represent an early ornithischian dinosaur. The fact that this animal is more closely related to crocodiles instead has important implications for the global fossil record of early dinosaurs. A paper on these findings was published in the *Proceedings of the Royal Society Series B* in May of 2005.



Transporting fossils from the dig

The Giving Site has proven to be one of the most productive sites in the park and possibly any other Late Triassic site in the Southwest, providing remains of rauisuchians, aetosaurs, phytosaurs, lungfish, and dinosaurs. Dinosaur finds are extremely rare from the Triassic and the Giving Site has provided a plethora of material. What appears to be a new species of aetosaur was excavated from the Milkshake Quarry. More material from metoposaurs, aetosaurs, and phytosaurs was collected from various sites throughout the park.

In 2006 the *Revueltosaurus* Quarry provided a nearly skeleton of *Revueltosaurus*, greatly enhancing our knowledge of this animal. The Giving Site provided more theropod, rauisuchian, and crocodylomorph material. The park hosted a scientific symposium centering mainly on Late Triassic paleontology. This symposium was accompanied by the publication of a research volume (*Museum of Northern Arizona Bulletin 62*) on Late Triassic geology and paleontology, describing four new fossil trees, several fossil plants, and two new fossil animals from the park including the new phytosaur collected in 2002 (*Pseudopalatus jablonskiae*) and the new trilophosaurid collected in 2003 (*Trilophosaurus dornorum*).

As inventory work and exploration continues over the next few years, new discoveries will shed even more light on the unique period of time in the Earth's history known as the Late Triassic.



Paleontologist Matt Brown in the park's prep lab

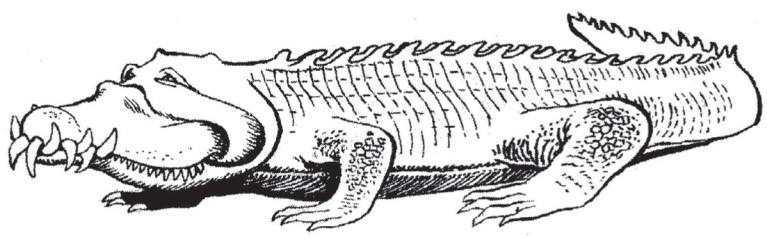
Kids' Corner

DIARY OF A PALEONTOLOGIST. . .

In the field...
The sun bums the back of my neck. A heavy drop of sweat rolls down my nose, drops off, and plop! It just misses my pencil as I'm writing in my notebook. My fingernails are dirty and sand coats my skin. Yet, I am as happy as I have ever been! I brush away more of the dirt and clay that covers more than 200 million year old bone. I have only a few pieces left before the fossil comes out of its rock tomb, and I take it to the laboratory for study.

In the laboratory...
I use the same kind of tools my dentist uses when he cleans my teeth - a sharp pick, a tiny air blower. I clean rock off the fossilized bones, using magnifying lenses to watch close, making sure I don't do any damage. It takes me many months of hard work to clean all the pieces and understand the shape of the animal they were once a part of. Many of the bones are missing, but I found enough to identify the creature as an early dinosaur of the Late Triassic Period.

In the office...
The glow from my computer is the only light in my office. I finish typing my notes and look over at the dinosaur bones. The fossil is ready for the museum collection. I gently touch one of the bones, and I imagine the living, breathing animal it was once part of. I catch a glimpse of movement, a flash of color, a shape disappearing into a green forest - for a moment, the animal is alive once again.



TRIASSIC TUNES

Do you like to sing? Learn the words and motions of this tune about the Triassic animals of Petrified Forest National Park. Sing to the tune of "If You're Happy and You Know It Clap You're Hands."

Verse one
Oh, the phytosaur (fie-toe-sore) it was a mighty beast,
Grr- owl (make growling sounds)
Oh, the phytosaur it was a mighty beast,
Grr-owl
It measured thirty feet in length
Weighed a ton and gulped down meat.
Oh, the phytosaur it was a mighty beast!

Verse two
Oh *Placerias* (pla-sair-e-us) was an herbivore,
Munch, munch, (say it loud and clap outstretched arms together)
Oh, *Placerias* was an herbivore,
Munch, munch
It ate leaves, plants, young "shoots",
Used its tusks to dig up roots
Oh, *Placerias* was an herbivore.

Verse three
Oh, metoposaur (meh-top-o-sore) was slimy, long, and wet,
Oh, yuck! (make "disgusting' faces)
Oh, metoposaur was slimy, long, and wet,
Oh, yuck!
It used its jaws and its sharp teeth,
To catch the meat it liked to eat,
Oh, metoposaur was slimy, long, and wet!

Verse five
Aetosaur (ate-o-sore) had plates upon its back,
Clack, clack (say it loud and clap hands behind back)
Aetosaur had plates upon its back,
Clack, clack
It had spikes by its head
Long legs, or so I've read,
Oh, aetosaur had plates upon its back!

Verse six
Coelophysis (seal-o-fie-sis) was one of the first dinosaurs,
Oh, no (say loud and run in place)
Coelophysis was one of the first dinosaurs,
Oh, it had hollow bones,
And long legs to help it go,
Coelophysis was one of the first dinosaurs!



Petrified Forest National Park Word Search

phytosaur	ferns	insects
fossils	water	crabs
teeth	fish	million
Placerias	trees	Triassic
bones	*Desmatosuchus*	

T	D	T	H	M	I	L	L	I	O	N	F	G	W	O	B
H	J	R	W	Q	N	P	L	A	C	E	R	I	A	S	L
T	F	I	S	H	S	H	K	V	F	A	F	Y	T	W	P
C	Z	A	U	Q	E	Y	I	M	T	O	T	E	E	T	H
O	B	S	D	Z	C	T	I	V	W	M	S	P	R	Q	A
D	E	S	M	A	T	O	S	U	C	H	U	S	T	N	X
K	N	I	R	B	S	S	D	Q	S	R	U	C	I	H	S
N	F	C	M	O	Z	A	W	E	O	Q	A	V	N	L	K
T	L	J	P	N	I	U	E	Z	C	R	W	B	M	P	S
S	T	E	K	E	L	R	Y	I	X	P	V	E	S	N	W
Q	H	B	C	S	T	X	A	G	B	O	R	X	N	V	Y

MAKE YOUR OWN FOSSILS

Materials and Equipment:
Seashells, leaves, buttons, or other objects (Be creative!)
Modeling clay
Plastic spoon
Spray cooking oil
Small paper cups
Plaster of Paris
Water

Procedure:
1. Press a ½" thick piece of clay into the bottom of the cup.
2. Push your object into the clay. Remove it and check the impression left behind.
3. Spray a thin coat of oil onto the clay surface, over the impression.
4. Half fill a second paper cup with plaster of Paris, add water gradually and stir until the mixture becomes thick and creamy. Pour the plaster over the clay in the first cup.
5. The next day, separate the clay from the plaster and check out your fossil cast!



FOSSIL ARCHITECTURE

How can scientists recreate an animal from just a pile of bones? Most of the bodies of prehistoric animals are gone, having rotted or crumbled away. Fossilized bones, however, provide clues which help scientists create an image of what the animal may have looked like.

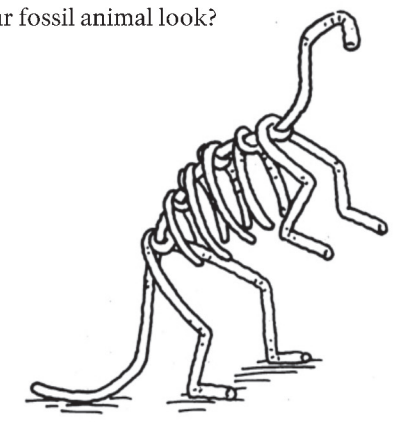
Often broken bones are all that is found. Paleontologists look for as many pieces as possible and then rebuild the skeleton like a jigsaw puzzle.

Get a hint on how paleontologists recreate a fossil animal and build your own!

Materials:
Pipe cleaners

What to do:
1. Use ten to twelve pipe cleaners to build an animal skeleton. See the example drawing.
2. Attach two or three pipe cleaners to make the head, backbone, and tail.
3. Bend and wrap one pipe cleaner for the front legs, and another for the rear legs.
4. Cut pipe cleaners different lengths and twist them around the spine for the ribs.
5. Bend the pipe cleaners to change the skeleton shape.

How does your fossil animal look?



PREHISTORIC POETRY

Hey kids! Petrified Forest National Park has a lot of fun stuff for you to see. One way for you to have fun, while learning about the park, is to write a poem. Poets express themselves, their thoughts, and their feelings using colorful sentences, fun phrases, or rhyming words. They often write about something that is important to them, like Petrified Forest National Park is important to all of us.

Here's an example of a poem about fossils at Petrified Forest National Park. Can you add more to it? Use the space below to add your own rhymes to the poem.

Those trees, those trees, those petrified trees!
Never will you see trees such as these.
All the reds and blues and yellows and browns,
Like the jewels embedded in royal crowns.
Watch your step. Don't bump your toe!
Those trees were trees long ago.
And then there are animals not known today,
Which once filled this land and made their way
Across streams and rivers and swamps and muds
Their footsteps echoing with great big thuds.
Fossilized bones, and teeth, and armored plates,
Even coprolites, fossilized poop, for goodness sakes!
Clam shells, and footprints, and fungus infestation,
Are all found in the park, in the Chinle Formation.
These fossils are clues to the past, the ancient Triassic,
The dawn of the dinosaurs, the time before the Jurassic.