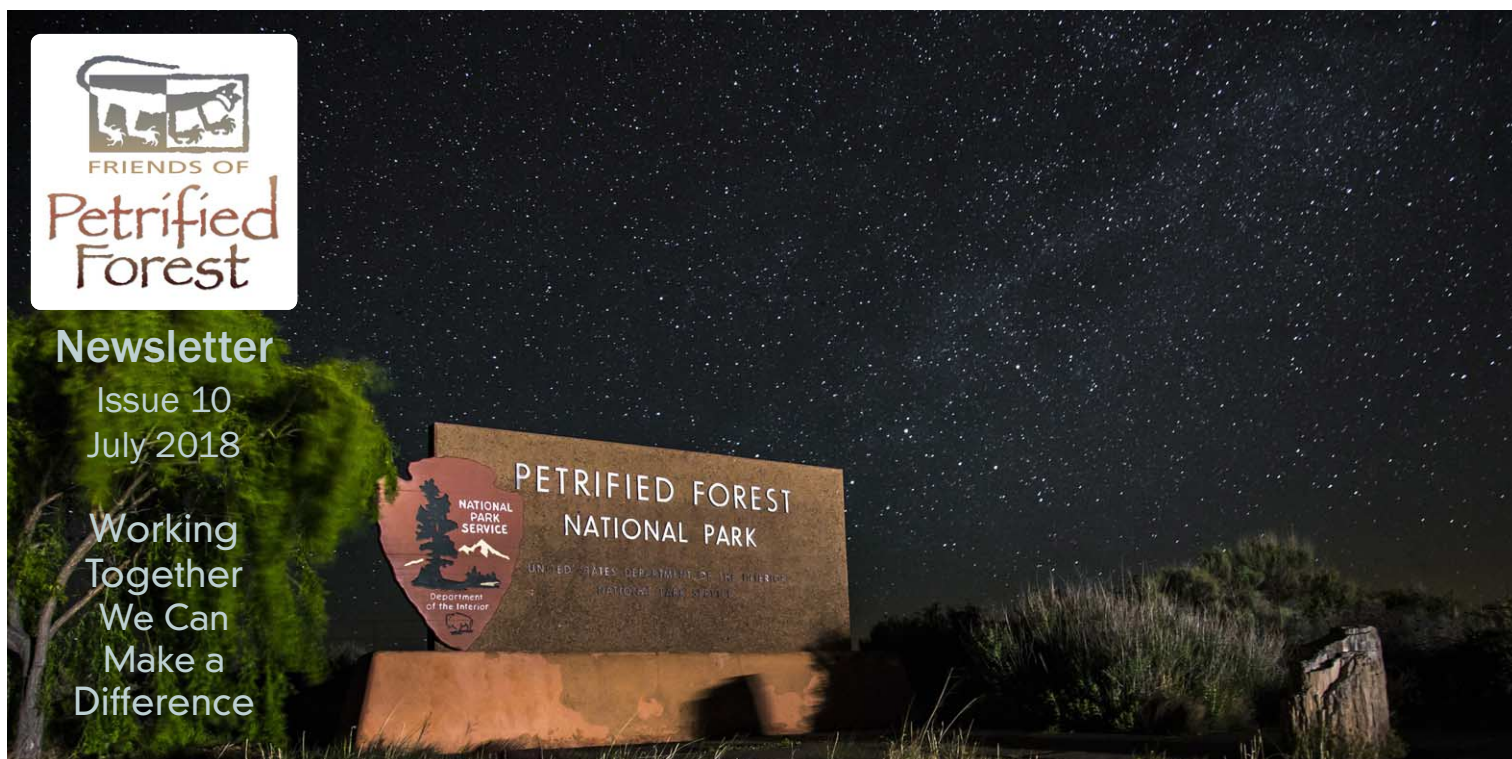




## Newsletter

Issue 10  
July 2018

Working  
Together  
We Can  
Make a  
Difference



# Celebrating Petrified Forest National Park's Dark Skies

This June, Petrified Forest National Park was officially designated as an International Dark-Sky Park by the International Dark-Sky Association (IDA). "Petrified Forest National Park is a fantastic place to see the stars at night," said John Barentine, Director of Conservation for IDA. "Its ancient landscape reminds us that the need for nighttime darkness is nearly as old as life on Earth itself, and today the park leads the way forward in preservation of this crucial, but threatened, natural resource."

Achieving official Dark Sky Park status is an extensive process, and park staff worked for years to gather and interpret night sky data, make lighting retrofits (while maintaining the character of historic buildings), meet all criteria for official IDA designation, and prepare the 100+ page application.

The park committed to achieving 100% dark-sky-compliant light fixtures within ten years, continued sky quality monitoring, and providing additional visitor opportunities for sky watching. Construction will begin on a campground this summer at Chinde Point. Construction will be phased but by the early

2020s, camping is expected to be available in a dark-sky-compliant campground. The park expects camping to be very popular.

"It took many in the Petrified Forest community to achieve this prestigious status," says Jacob Holgerson, park ranger and author of the park's application. "From every division within the park, our neighbors, partners, volunteers, and experts all aided in preserving our dark skies for future generations to enjoy." Special thanks go to Jacob for a job well done, to Randy Stanley (NPS Natural Sounds and Night Skies Division) and John Barentine for their assistance with the application, and also to Lori Rome of Capital Reef National Park, and James Greymountain, Bill Reitze, Nick Poulos, Kip Woolford, Richard Ullmann, and Kevin Dowell of the Petrified Forest staff, for their work in getting the park ready to apply.

In honor of its designation, Petrified Forest National Park will celebrate this fall with a star party, and valued partner Petrified Forest Field Institute is planning to ramp up its night-sky-related programming (see article page 5).



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## Prairie Dogs at Petrified Forest National Park

If you've visited Petrified Forest National Park, you'll remember it is Arizona's big sky country. Grasslands, badland hills, and rocky mesas are the predominant landforms in a wide variety of colors. For over 100 years, similar lands outside the changing park boundary have been used for grazing cattle. The grasslands are also the natural home of Gunnison's prairie dogs. In the last few years, since the park has acquired lands (as authorized by Congress in the Petrified Forest Expansion Act of 2004) previously grazed by neighboring ranches, it has taken a more active management approach with Gunnison's prairie dogs.

All prairie dogs are susceptible to the plague, which is transmitted by fleas — up to 99% of a prairie dog colony can be wiped out if the disease gets into the population. Park biologists believe this has happened in waves historically, with populations growing for several years until the plague returns to knock it back and the cycle continues.

The Arizona Game and Fish Department began reintroducing endangered black-footed ferrets to their natural grassland environment in 1996. Black-footed ferrets were nearly extinct — the last population was discovered in 1981 in Wyoming. At its low point, before the last animals were placed in a captive breeding program, there were only 18 ferrets left. From these 18, reintroduction efforts in several states, including Arizona, have evolved. Arizona has released 35 animals so far. Black-footed ferrets subsist almost exclusively on prairie dogs.



With thousands of acres of prairie dog habitat, Petrified Forest has begun working with Arizona Game and Fish to map prairie dog colonies, monitor their number, and prevent plague from returning to knock back population size. The long-term goal is for Petrified Forest to be considered a black-footed ferret reintroduction site. This requires that there be a population of prairie dogs that is large enough to sustainably support a small population of black-footed ferrets — over 5,000 acres. Entering the summer of 2018, the

population of prairie dogs in the park is estimated at about 100 animals in 14 small and scattered colonies, occupying about 300 acres, far from the population required to be considered. Park staff, with help from Arizona Game and Fish, will start applying flea repellent "dust" to all burrows in June. They will also leave behind oral plague vaccine for the prairie dogs, which inoculates the animals against plague.

The summer of 2018 will also see the translocation of 100 Gunnison's prairie dogs to Petrified Forest from a single colony in the way of a construction project in the Flagstaff area. The Flagstaff-based non-profit group Habitat Harmony, Arizona Game and Fish, and Petrified Forest, with help from the Friends of Petrified Forest, will team together to place these 100 animals in human-constructed burrows in the park. In order to protect the animals and to be able to track the outcome of the translocation, the animals will be tagged and restricted to their new burrows and provided supplemental

*continued next page*



# Helium Mining: A New Issue for Petrified Forest

by Kevin Dahl

It has been known for decades that helium gas is plentiful at some locations underground in the Holbrook Basin, a geologic region that includes a large part of Petrified Forest National Park. Rising prices have generated new interest in mining helium, which until now has mostly been produced as a byproduct of oil and gas extraction. Helium is not just used to keep balloons aloft — it is a key ingredient in some medical and industrial applications.

Several companies are active around the park, currently exploring and/or extracting helium. One company has applied for leases from the Bureau of Land Management for mining on public lands both east and west of the park.

Another company, Rare Earth Exploration ([rareearthex.com](http://rareearthex.com)) has leased 1,877 acres of private minerals under federal surface and 2,433 acres of state lands inside the park boundary, and will develop 10 wells in all if the first two produce as they hope. They are working with the Park Service to obtain permits and environmental compliance for future drilling.

Helium wells do not take up much room — they can operate on a 150 by 150 yard footprint, and plants that extract helium from other gases (mostly nitrogen in the Holbrook Basin) are not all that much larger (one processing plant near the park is pictured above). But their operation can have various impacts on park natural resources and visitor experience. They use loud generators, have bright lights, require new roads in some cases, and generate traffic composed of heavy equipment and large tanker trucks. Fracking technology can be used, and the impact to the aquifer and surface water (should a spill take place) needs to be evaluated, avoided, and mitigated.

There are a number of conservation organizations and a team of local residents who are following and working on this, and who are especially concerned about the dangers of fracking.

If you are interested in learning more, please contact me at [kdahl@npca.org](mailto:kdahl@npca.org).

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## Prairie Dogs at Petrified Forest National Park *continued*

feeding until they are acclimated. Family groups will remain together, which is important for their social structure.

Translocations, treatments to keep plague at bay, and annual monitoring and mapping are all active ways that Petrified Forest National Park and Arizona Game and Fish, along with

their partners, are creating conditions that will place the former ranch lands of Petrified Forest as a reintroduction site for black-footed ferrets, thereby returning the park closer to its natural ecosystem.



## New to the Bookstore:

### ***Flying Home, The Colorado Plateau from Above and Below* by Craig Childs**

Craig Childs (*House of Rain, The Secret Knowledge of Water*) is your guide as he and pilot friend Neal Schwieterman hop from one mesa-top landing strip to another in a 1946 Cessna, taking you on a unique tour of the Colorado Plateau's most spectacular public lands. Between hawk's-eye panoramas from the air and on-the-ground adventures, you'll fly directly into the heart of the Colorado Plateau. Along the way, Craig's shares his deep, personal experience of these special places.

Beautifully photographed, this book has every Peaks, Plateaus and Canyons Association (PPCA) member represented. Proceeds from the sale of this book benefit each individual park's member association and also funds future PPCA endeavors in highlighting the beautiful Colorado Plateau.

Winner of the 2018 Public Lands Alliance Publication of the Year.



## **Petrified Forest Museum Association: Supporting the Park in a Myriad of Ways**

Petrified Forest Museum Association (PFMA) is the official non-profit cooperative partner of Petrified Forest National Park. As an independent association, all of our activities are focused on supporting the park in a myriad of ways. We have served in this capacity since our formation in 1940 and have grown from initially supporting park museum collections into research, publishing, education, interpretation, cultural demonstration programs, park publications and trail guides, development of park-specific materials, outreach and staffing assistance, to name a few. Among recent efforts, our association has developed and is operating a Field Institute (see next page) that provides unique opportunities for visitors to interact more deeply with aspects of the park than would be possible in a typical day trip to the park.

Through our publishing program, PFMA has developed and published several titles specific to Petrified Forest National Park and beyond, utilizing the latest information and finds from ongoing research at the park. *Dawn of the Dinosaurs*, our most recent title, delves into the world-class Triassic Era deposits exposed and preserved at Petrified Forest National

Park, as well as deposits exposed worldwide. It was coauthored by Christa Sadler; Dr. William Parker, Chief of Resource Management at Petrified Forest National Park; and Dr. Sidney Ash, a long-term researcher and contributor to the park, and author of the park's principal book, *Petrified Forest — A Story In Stone*.

Since the 1990s, PFMA has offered a variety of Cultural Demonstration programs at the park, giving visitors the opportunity to meet and interact with regional neighboring cultural artisans, view crafts as they are being created, purchase finished crafts by the artist on-site, and learn more about the culture and crafts of the artisans. Visit [www.petrifiedforestbookstore.com](http://www.petrifiedforestbookstore.com) to see upcoming programs; as always, our schedule is subject to the health, weather, or other conditions beyond our control.

We are proud to be active participants and supporters of Petrified Forest National Park and its initiatives to expand park services, education, interpretation, services and opportunities for the visitors to park.

## Growing Small *by Amy Lynn Reifsnyder*

Where do I begin? How do I tell you that since participating in Petrified Forest Field Institute's Fossil Dig, I look out my front door differently? What could I tell you that would bring to you the same sense of adventure, the same appreciation and excitement?

How do you find fossils, anyway?

It takes time. An awl. A couple of brushes. Patience. A bright, mid-day light to find fossils in the "bone layer" of a mound. And an opportunity offered by the Petrified Forest Field Institute in the colorful badlands of Petrified Forest National Park. We started the day with a tour of the research facilities located behind the Painted Desert Visitor Center, on the Interstate-40 end of the park. There we learned about the phytosaur, whose partial skull was on display. Handsome thing it was, with a toothy snout about as long as my forearm. Looked a bit like a crocodile with shark teeth. Close! It wasn't a croc but a long-distant relative — a phytosaur.

The paleontology team — Bill Parker, Chief of Resources; Adam Marsh, Lead Paleontologist; Ben Kligman, Paleo-Intern; and Chuck Beightol, Term Paleontologist — worked patiently with me and four others as we unearthed any number of fascinating items buried in the rock. I found a vertebra of I-don't-know-what, but it was still exciting. I was suddenly aware that there is oh, so very much more to know and explore — and it is under our feet.

We spent most of the day kneeling or lying in the dirt, chipping, sweeping, and prying rock apart to see what we could see. Marsh kept an eye on what I was doing, and occasionally picked up an ancient fish scale that I had overlooked. (They are very small.) He supervised while I dug out coprolites (fossilized dung), some of which also contained scales.

Beightol observed from above the dig line, catching glimpses of remains we missed. Someone found a really tiny spinal column. Most of us found teeth. Parker identified an ulna. Kligman supervised handling of the "small details".

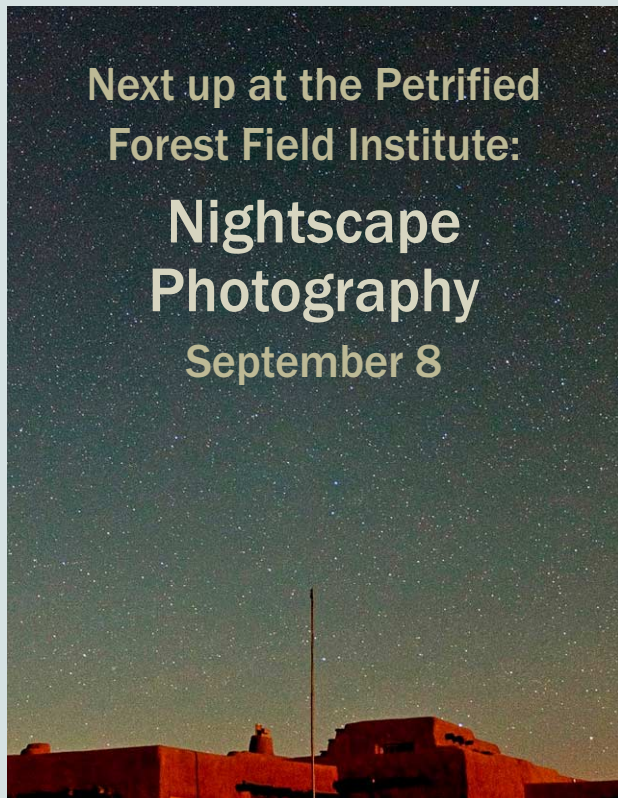
It was a blustery day, and from time to time, a hat, a kneeling pad, or baggie would get away from us. This sort of distraction was actually beneficial, as it gave us a moment to look around and take it all in, like how the changing light created new colors on the hills and canyons.

My world has gotten much bigger — and older — since the dig. When I was little, I always wanted to be one of those people who made great discoveries. And at least for one day, I was that person.

Next up at the Petrified  
Forest Field Institute:

## Nightscape Photography

September 8



The focus of the Petrified Forest Field Institute (PFFI) is largely on the different ways and means of providing meaningful, experiential education in this fantastic park. Our upcoming event, *Nightscape Photography*, does just that and more. While urban sprawl and its light pollution has encroached into many wild spaces, our rural location has remained remarkably unaffected, making it possible to enjoy, discover, and remember.

Many of us can recall memories of staring in awe up at the stars in hopes of spotting a meteor or sharing stories of the constellations. Night sky viewing events are some of our most popular and well-attended park events, drawing visitors from all over the country to appreciate the night sky in a place where its wonders are still valued.

The evening of September 8 will be a pleasant and opportune time to try nightscape photography with Emmy-award-winning cinematographer and instructor, Frank Kraljic. Photographing the glorious Milky Way is the perfect prescription for those of us who seek grounding in a world that is quickly becoming replaced by gadgets.

To register for this or any PFFI field seminar, visit [www.petrifiedforestfieldinstitute.org](http://www.petrifiedforestfieldinstitute.org).





## Facility Projects: Moving Forward with Improvements

The National Park Service gets national attention from time to time about its deferred maintenance backlog. Petrified Forest is addressing this issue through a variety of upcoming projects. The park's deferred maintenance total is approximately \$44 million, two thirds of which (\$29.3 million) is in its paved roads, according to the most recent data available from September 2017. The next largest percentage is deferred maintenance in buildings, which is 12% (\$5.4 million) of the total. There are also needs for modest new facilities and modernization of existing facilities not categorized as deferred maintenance — like bringing historic structures up to modern building codes and improving accessibility. There are several projects you may see underway this year and next when you visit the park.

If you visit Rainbow Forest this summer and fall, you are very likely to notice the reconstruction that will be taking place on the north portion of the Giant Logs Trail. There are two primary purposes for this work — the trail's condition and a desire to make as much of it accessible as possible. The trail is on a slope and where previous construction episodes installed stairs in some places, this project will remove barriers to universal access and create a loop that meets trail accessibility standards. It will widen the trail to allow passing throughout the northern portion and resurface the trail and add stone edge to be consistent with its historic character. The original 1930s stairs, built by the Civilian Conservation Corps (CCC) in the southern portion of the trail, will not be removed.

On the other hand, also at Rainbow Forest, the wastewater lagoon system will be rehabilitated and brought up to current permitting standards. It is and always has been a self-contained evaporative system but the liners will be replaced and the whole facility updated before the end of the year. Since this facility is intentionally located out of public view, you may not notice this work even while it's happening.

At the northern end of the park, at Chinde Point picnic area, the first of four planned phases will convert the existing site

to both a small campground and a picnic area. This year's work will extend electric power and wastewater collection piping from Painted Desert Inn to Chinde Point, about a half a mile along existing roads. When complete, Chinde Point will have 18 campsites, some with full hook-ups and others without, as well as picnic sites. The campsites will be the first public structured campsites in the park since the campground at Rainbow Forest closed in 1953. Because the construction is expected to start soon, the Chinde Point restroom is not expected to open this summer.

For the last few years, park staff has been replacing the water pipeline connecting the north end of the park to the south, providing service to the Rainbow Forest area. Thirteen miles of that pipeline were installed by the CCC in the 1930s and portions of that pipe have served the park for over 80 years. In all, park crews will replace about 10 miles of pipeline which used to break frequently — one recent summer there were 7 major breaks in 7 weeks. Already, having put 8 miles of new pipe into service, breaks have been virtually eliminated. You may see evidence of the crew's work from the park road where the path of the pipeline is near.

Design is underway this year for one of the biggest projects at Petrified Forest since the 1960s — a rehabilitation of 13 miles of the main park road, valued at around \$10 million. Work is expected to occur in 2019, mostly at the southern end of the park where road conditions are the worst. When complete, the condition of the main park road should be significantly improved and the culverts underneath it should last many more decades.

Major rehabilitation of the main park headquarters, the Painted Desert Community Complex National Landmark District, has been requested and could soon be scheduled for the 2020s. All in all, Petrified Forest, although representing a miniscule portion of the overall agency deferred maintenance figure, is trying to do its part to address that backlog.



# Bio Blitz



On August 25 Petrified Forest plans to hold a bio blitz. It is an opportunity for a limited number of interested citizen scientists to be led by subject matter experts into the park to tally all the various biota they encounter over a 24-hour period. When the park conducted bio blitz events in 2014 and 2016, new species of plants were identified in the park.

The way it will work this year, 20 to 25 subject matter experts will lead various excursions based on their specific expertise. The ungulate expert will lead the ungulate group, the bird expert will lead the bird group, etc. A part of the group they will lead will include students and other professionals. As space is available, citizen scientists will fill the remaining spots in each group.

The event will start at 9 am on Saturday, August 25, at park headquarters. Citizen scientists will only be able to participate through the park's normal closing time. If you are interested in participating as a citizen scientist and would like to get your name on a list to be contacted as the date approaches, please contact Andy Bridges, park biologist, [andrew\\_bridges@nps.gov](mailto:andrew_bridges@nps.gov) or 928-524-6228 x278.



August 25, 2018  
9 am at Park HQ