

# Friends of Petrified Forest National Park

Working together we can make a difference!



*Revueltosaurus Quarry,  
June 2012.*

## Exceptional Findings at Petrified Forest National Park

Petrified Forest National Park is the site of field science every summer but this year, there were some exceptional findings in the fields of paleontology, archaeology, and ecology.

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### Join the Friends Group!

If you have an expertise or interest in paleontology or archaeology, join the Friends of Petrified Forest National Park for a survey day! You can document rock art and puebloan sites, walk the badlands in search of fossil material, assist in excavations at known fossil quarries, and learn more about park resources with others who share your interest. Contact [Brad\\_Traver@nps.gov](mailto:Brad_Traver@nps.gov) for more information.

### Welcome!

The Friends group is a non-profit, partner organization that supports the mission of the park, particularly in the science and education fields. The role of individual and institutional Friends of Petrified Forest National Park is to bring expertise to the planning and support of research projects and educational endeavors designed to study, evaluate, and interpret the natural and cultural resources of the park.

Support the Friends group and encourage others to join! Feel free to share this newsletter and information about the Friends group through traditional and social media. We need your help to spread the word!





*Revueltosaurus* Quarry excavation (left) and bone blocks removed from the quarry. (right)

## Paleontology

Bill Parker, park paleontologist, started the 2012 summer season with a great deal of optimistic anticipation for two reasons: he was about to reopen a bone quarry that once yielded unique findings and he had 26,000 acres of new land to explore for paleontological sites.

The quarry project, funded by the National Park Service, reopened the site where the world's most complete record of *Revueltosaurus callendari* was found. Previously known only by its teeth and thought to be an early dinosaur, the quarry produced eight specimens, collected between 2004 and 2006. One nearly complete skeleton revealed that *Revueltosaurus callendari* was more closely related to crocodiles and therefore was not a dinosaur, creating worldwide change in the fossil record of dinosaur evolution.

Two questions remained: what did the missing parts of the skeleton look like, and why were so many of these animals in one place?

Work during the summer of 2012 produced three more *Revueltosaurus* skeletons, including several skeleton parts not recovered previously. Removal of rock from around the bones is ongoing in the lab.

In addition to the excavation of bones, soil analysis at the quarry is being conducted. This

may help determine if the site could be identified as a burrowing area. The concentration of bones also implies that the death of the animals may have been caused by a catastrophic event.

In addition to work at the *Revueltosaurus* Quarry, Parker's exploration of new lands resulted in two fossil localities which were previously unknown. Prior to acquisition, the paleontology community knew of at least a dozen localities on these lands that were successfully excavated, with permission of the owners.

Others in the scientific community continued with park approved and coordinated research during the summer of 2012. The Smithsonian Institution returned for a third year to excavate in an area and within a specific geologic layer not explored previously. Their specific purpose is to study the paleo-ecology of the first mammals from 200 million years ago. No results have been published yet, although their work has yielded interesting results so far.

Yale University returned for a third year, exploring an area and a specific geologic layer not previously studied. Their work included the discovery of several nearly complete skeletons, including the first complete fish skeleton found in the park and the most complete aetosaur yet found in the park. Other discoveries are ongoing.





Paleontologist Bill Parker working in the *Revueltosaurus* Quarry.

Baylor University has been working in the park for the last four years analyzing soil layers. Their data determines climate information, such as annual rainfall and temperatures, for all the definable soil layers exposed in the park. These layers were deposited between 200 and 220 million years ago. Baylor's work, nearing completion, provides more specific dates and climate information for the entire park.

Petrified Forest National Park has funding for another season of excavation at the *Revueltosaurus* Quarry. Efforts to identify and explore promising sites on new lands will continue. Research partners may be prepared to publish some of their findings, as well as to continue their fieldwork next year.

## Archaeology

This summer, park archaeologist, Bill Reitze, had 26,000 acres of new lands to explore. According to Reitze, "Every time I went out there I found another multi-room pueblo site. It was incredibly rich in archaeology."

Specifically, he found the following sites:

- A multi-room pueblo similar in age and construction to Pueblo Bonito at Chaco Canyon.
- Four or five multi-room pueblo sites along the

southern escarpment of the Puerco River.

- A late Basketmaker pithouse with interesting ceramics.
- A second Basketmaker site.
- A heavily damaged pueblo looted when the land was privately owned.
- The remains of field houses, multi-room pueblos, and at least one Basketmaker site in the lowlands.
- About 50 petroglyph sites, all with multiple petroglyphs.

Reitze had help this summer. Seasonal archaeologist, Amy Schott, back for her second year, conducted dozens of condition assessments. Schott is a University of Arizona student and, in addition to her work for the park, is researching the stability of sand dune formations over thousands of years.

Another assistant was an intern, Joshua Van Buskirk. In addition to his work for the park, Van Buskirk is researching hundreds of hammer stones found at sites of all ages.

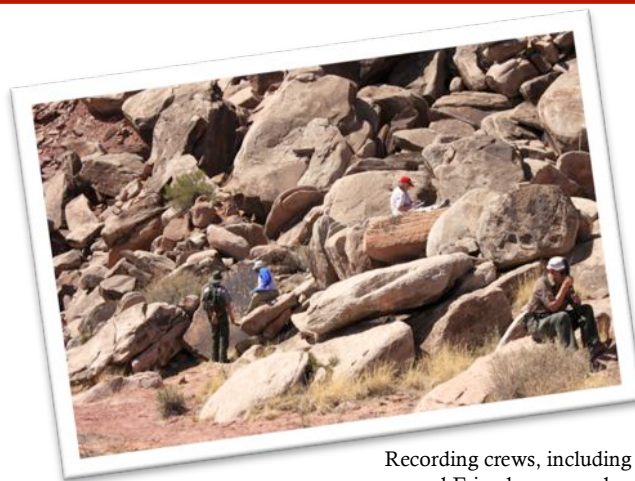
A small parcel of new land holds the ruins of an 1880's stagecoach station. Serving the Star Stage Line, the station may have been used from the 1870's until about 1885. The stage route in this area followed the same approximate path as the Beale Wagon Road, Route 66, the Atchison,



Chaco outlier site found on new lands

Topeka and Santa Fe Railway, and Interstate 40. This summer a crew of National Park Service preservation masons stabilized the mortar in the original rock walls of the stage station.

Archaeological discoveries this year were preliminary. Reitze was recently successful in receiving National Park Service funds to begin professionally recording sites on new lands next year. The Friends Group will have ample opportunities to help with these surveys next year!



Recording crews, including several Friends, on new lands

## Ecology

Seasonal biologist, Andy Bridges, back for his second summer, studied reptiles and amphibians in the park. Bridges conducted an annual survey that has been completed for 21 consecutive years. This summer he found the Long-nosed Leopard Lizard for the first time in the park.



Long-nosed Leopard lizard

The study incorporates three different monitoring methods: a) driving along the park road each evening and recording every reptile and amphibian encountered, b) trapping reptiles and amphibians in their natural habitat, and c) visual encounter surveys during which the biologist walks a specific pattern over a selected site and records what is found.

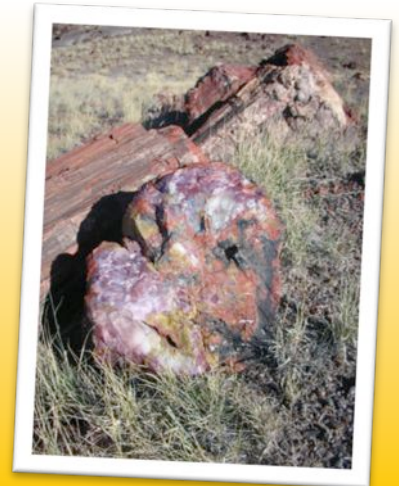
The Long-nosed Leopard Lizard was identified during an incidental encounter at a trapping site. The new find is now the largest species of lizard found in the park, at about 5½” long. Petrified Forest National Park is located at the edge of the lizard’s known range. It is not known why the lizard has expanded its habitat, but unlike common lizards, it doesn’t adapt well to human development.

The New Mexico Whiptail Lizard was first identified in the park a few years ago as a result of the summer study. Its identification at Petrified Forest National Park was the only verified sighting in Arizona. Since its initial identification, subsequent surveys, including this past summer, have found that the lizard is establishing a colony in the park. It is an exotic species, but has not yet been determined “invasive,” or disruptive to the native components of the environment.



## Conscience Contributions

People are always trying to return petrified wood that may or may not have been stolen from the park. Most are just trying to do the right thing, but some are having bad luck and believe that returning the wood will change their luck for the better. The park refers to returned petrified wood as “conscience wood.” Instead of returning petrified wood, which has lost all scientific context and can never be replaced in its original location, monetary contributions could be made that would be much more beneficial to the park. This is an idea for the Friends group to pursue!



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## How Can Friends Help?

The Friends group can help Petrified Forest National Park in many ways. Park managers realize that budgetary restraints will be a fact of life for the foreseeable future. Although funds required for projects are welcome from all sources, the Friends of Petrified Forest National Park may be able to enhance the use of social media, web-based funding, and grant requests in order to compete more effectively for project money. Paleontological excavations, archaeological surveys, education programming, and scientific outreach support the mission of the park and have the most need for project funding.

### Fund-raising

Petrified Forest National Park is writing a proposal to the National Park Foundation for three interns for the 2013 summer season. These interns would help with paleontology, archaeology, and/or Geographical Information Systems (GIS). Interns are estimated to cost an average of \$1500 each for 10 weeks. If the Friends group could seed this proposal and seek a match from the National Park Foundation, the proposal may have a greater chance of success. Donations can be made to the National Park Foundation in the name of Petrified Forest National Park until the Friends group is officially organized.

### Volunteer Work

In addition to on-going fieldwork with the park's paleontologist and archaeologist, other opportunities to volunteer are forthcoming.

Petrified Forest National Park is planning the construction of an accessible walking trail from the Painted Desert Visitor Center to Tawa Point. This new trail would then connect to the existing Rim Trail, running from Tawa Point to Painted Desert Inn. Volunteer opportunities to help with this project will be during the summer and fall of 2013. Contact [Brad\\_Traver@nps.gov](mailto:Brad_Traver@nps.gov) if you are interested in helping. More information will be available as the dates come into focus.

## Join the Friends Group today!

You can be a member of the Friends of Petrified Forest National Park! Contact Kevin Dahl for more details.

[kdahl@npca.org](mailto:kdahl@npca.org)

*Visit the park's official website to learn more about the park and its resources: [www.nps.gov/pefo/](http://www.nps.gov/pefo/)*



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