



**FRIENDS OF CITY OF ROCKS NEWSLETTER**  
**(Vol. 6, No. 1, Jan. 2022)**  
**MISSION STATEMENT**

The purpose of the Friends of City of Rocks State Park, Inc. (website: <http://friendsofcityofrocks.org>; e-mail address: [friends@friendsofcityofrocks.org](mailto:friends@friendsofcityofrocks.org)) is to help support the New Mexico State Parks in the enrichment of the park area. Specifically, the Friends aim to enhance, preserve and promote park use, to participate in nature as responsible stewards of the earth, to create an awareness of the wonder, fragility and importance of the park, to develop and improve existing education/interpretive programs, to develop and improve public awareness of the park, and to encourage public participation and/or membership in the Friends group.

**BECOME A MEMBER OF THE FRIENDS!**

Interested in helping out City of Rocks State Park? Consider joining the Friends. Typical Friends activities include highway cleanup, cutting and splitting firewood for sale to park campers, operation of a gift shop in the park Visitor Center, fund-raising, etc. To join, a) complete and send in the membership application form at the end of this newsletter, OR b) download, complete and submit a membership application from the Friends website (see above). **NOTE: If you are already a member of the Friends, it is time to renew your membership! You can do so using the same form mentioned above.**

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## THANKS TO SUSAN MOSELEY!

Long-time Friends member Susan Moseley has stepped down from her elected positions as Secretary and Treasurer after many years of service to this non-profit organization. We thank her for all of her behind the scenes activities to support the Friends, including managing the Friends bank account, managing supply purchases for the Friends store, serving as the Friends liaison for the annual Give Grandly event, preparing annual financial reports, filing required tax forms, baking cookies to feed participants at wood splitting / bundling events, etc. Hers will be big shoes to fill. Thanks Susan! – Tim Geddes and William Norris, President and Vice President, Friends of City of Rocks

## SCHEDULE OF UPCOMING EVENTS

**Friday, Jan. 21 2022. 7 PM - 8 PM. Zoom Presentation: The Fabulous Flora of City of Rocks State Park. Presenter: William (“Bill”) Norris. Co-Sponsored with New Mexico Native Plant Society (Gila Chapter).**

**Presentation Access:** Join Zoom Meeting <https://us02web.zoom.us/j/82270065291?pwd=SUdick5lMWRtbUVjNjJVaFpHSkg2UT09>

Meeting ID: 822 7006 5291

Passcode: 614794

To use a phone for the audio portion of the conference, dial +1 346 248 7799

**Saturday, Jan. 22 2022. 10 AM – Noon. Winter Botany Hike at City of Rocks.**

**Presenter: Edwin (“Ed”) Leuck, assisted by Russ Kleinman and William (“Bill”) Norris. Co-Sponsored with New Mexico Native Plant Society (Gila Chapter). Meet at Park Visitor’s Center.**

**Saturday, Feb. 5 2022. Star Party. Begins at 6:15 PM (weather permitting).**

**Saturday, Feb. 12 2022. 9 AM – 11 AM.**

**Winter Bird Hike at City of Rocks.**

**Leaders: Karen Beckenbach and William (“Bill”) Norris. Meet at Park Visitor’s Center.**

**Wednesday, Feb. 23 2022 -Thursday, Feb. 24 2022. 9<sup>th</sup> Natural History of the Gila Symposium. Hybrid event (WNMU Global Resource Center, On-Line). FREE to the public. For more information, see <http://wnmu.edu/gilasymposium>.**

## CITY OF ROCKS VISITOR’S CENTER GETS A FACELIFT

Article and Photos by Kathy Whiteman

Faywood, NM- Last summer, youth aged 8 to 14 worked together to give the City of Rocks Visitor Center a facelift. The project, funded by the New Mexico Economic Development Department’s Outdoor Recreation Division Outdoor Equity Fund, was a partnership between City of Rocks State Park, the Western New Mexico University Outdoor Program, and the Youth Murals Program.

“It was great having the kids out here at the park changing what was once a blank wall to an amazing mural for all our

visitors to enjoy” said Gabe Medrano, Park Manager, City of Rocks State Park. “I would like to thank the kids for their hard work, and I look forward to working with WNMU on another mural.”

“Projects like the Youth Mural Program at City of Rocks State Park perfectly capture the spirit of the Outdoor Equity Fund,” said ORD Director Axie Navas. “It’s truly transformative outdoor recreation, combining outdoor exploration, community pride, and climate change education.”

The two-week program aimed to engage low-income youth from Grant and Luna Counties in nature-based outdoor recreation activities while providing education about climate change and the local environment. During the first week, the program emphasized an understanding of place – or “where we are in the world.” Kids participated in classroom activities learning about climate, ecology, the role of fire in local ecosystems and participated in a field trip to the Gila National Forest, and City of Rocks. Following these immersive activities, kids spent two days designing the mural, in part by reviewing plant and animal checklists found on the Friends of City of Rocks website. These lists were important in helping the kids to choose animals and plants they wanted to include in the mural.



Three youth drawing the landscape at the Silver Fire Burn Area, Gila National Forest.



Setting up the scaffolding and preparing the wall.

During week 2, the kids drew the mural on the Visitor Center wall and worked on painting. The campers worked in small groups to avoid congestion on scaffolding. Groups not painting were engaged in team building activities, discovery hikes, and other crafts. On the final Friday, kids participated in an overnight camp trip with their families. The Park donated the group camp site as well as firewood and outdoor gear was provided by the WNMU Outdoor Program.



Sketching and painting in the rough design



Young adult Youth Murals Intern, Mia, working with the campers.

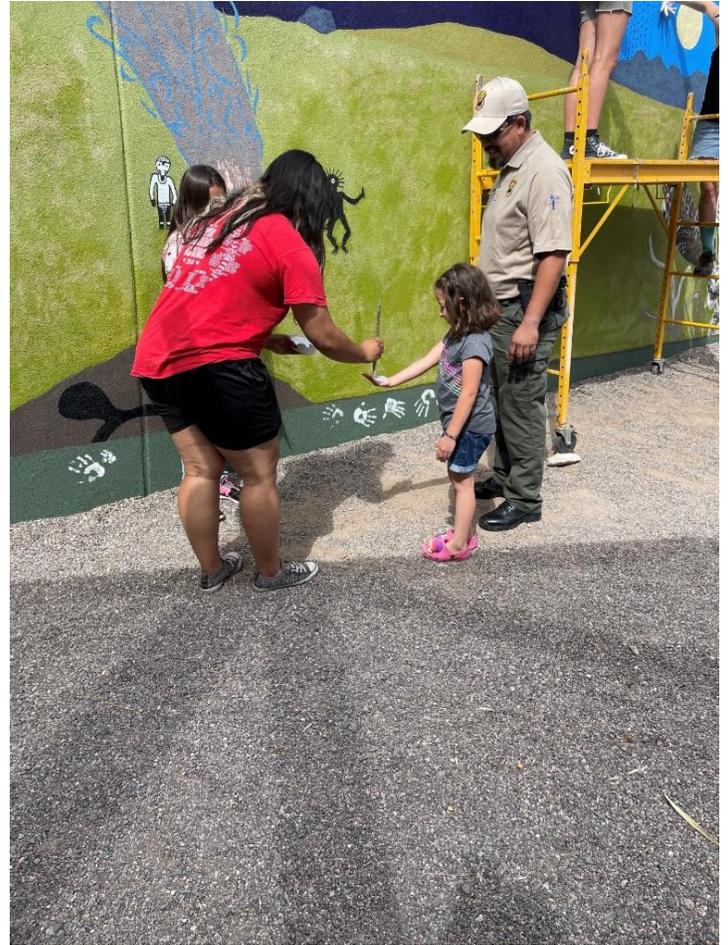
While kids played on the rocks, young adult interns and parent volunteers prepared chicken fajitas and everyone enjoyed a delicious meal watching the setting sun put on a marvelous display of color. Later, families chatted around the campfire making smores, observing bats forage for insects, and watching stars pop out into the dark sky. The following morning, the kids explained, *“We were up until 3 A.M., it was awesome!”* A weary adult responded, *“I could hear them talking and laughing all night.”*

The experience was hugely impactful to all participants, many of whom had never camped in a tent. Not only did the kids learn about the local environment and

take ownership of the mural design and execution, they also made lasting friendships. “Every summer, the Youth Murals Program offers a “summer camp”, but this year’s partnership with the WNMU Outdoor Program was something special,” commented Youth Murals Program Director Diana Ingalls Leyba. “This year, the kids seemed to form true friendships and I think this had to do with the overall experience of spending so much time together traveling to and from the Park each day as well as the activities associated with this year’s program.”

“We were fortunate to partner with the Youth Murals Program and City of Rocks State Park,” said WNMU Center for a Sustainable Future and Outdoor Programs Director Kathy Whiteman. “Diana and her interns were really great with the kids, and Gabe went out of his way to accommodate all the facets of this project, from helping to store scaffolding and paint to letting the kids be kids - running around, and into, the Visitor Center each day. Gabe is a tremendous asset to the Parks and our community. I am grateful that he made this project possible.”

On Saturday morning, a mural dedication involved families and attendees adding their handprint to the mural border along with a discussion about the possibility of continuing to work on the mural, or a new mural, next summer. The general consensus was that two weeks just isn’t long enough.



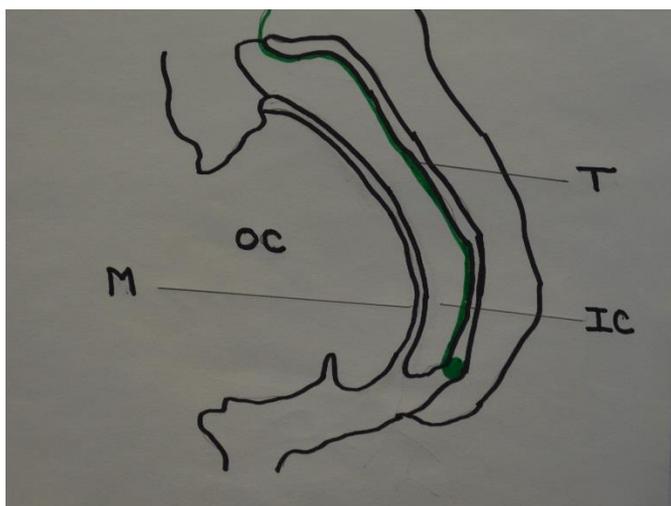
Park Ranger Gabe Medrano adding handprints to the mural during the dedication ceremony.

Thanks to all who were involved in this fantastic project. It was great to get the kids to City of Rocks and let them explore and experience the wonders of the Park.

## REPTILE EXTRA SENSORY PERCEPTION

Article and Illustrations by Tim Geddes

Man places himself at the top of “Scala Naturae”, the Scale of Nature. If all of evolutionary life were placed on a metaphorical ladder man would be on the top rung, all other animals below him. Some animals like dogs and maybe apes and monkeys are not considered to be so far below humans but the “lowly” reptiles are loathsome creatures of the swamp and other waste places and do not achieve the level of human organization. A review of reptilian senses may change that perspective. Some reptile senses are beyond human experience.



Microscopic Cross-Section of Thermal Pit. IC – Inner Chamber. M – Membrane. OC – Outer Chamber. T – Trigeminal Nerve.

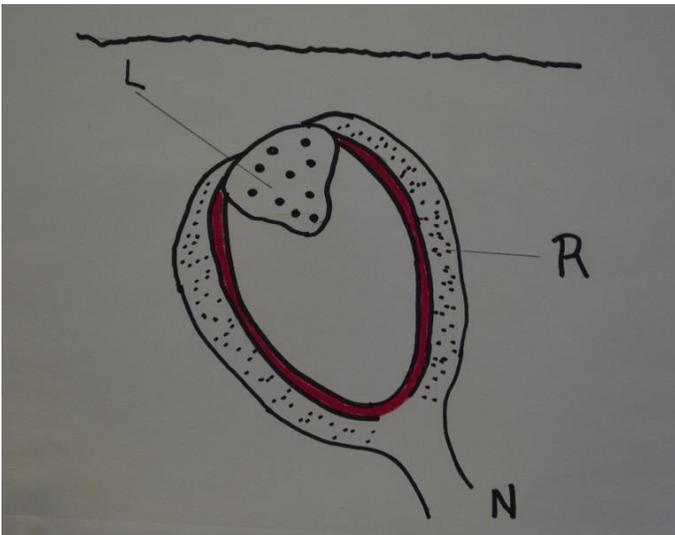
Pit vipers are a subfamily of snakes that are characterized by the presence of a depression, or pit on the sides of the face between the eye and the nostril. The pit is sensitive to changes in temperature. Pit vipers include copperheads,

cottonmouths, and relatives that range from the Americas to Asia. Rattlesnakes are found in the New World.

It was long wondered just what the pits were for. Were they extra nostrils, ears, or do they detect air movements? In 1937 Noble and Schmidt conducted experiments on pit vipers and determined that the snakes deprived of other senses were able to strike accurately at warm incandescent light bulbs. The tongues were cut off, the eyes taped, and the snakes could detect temperature differences of 0.2C at about ten inches. Pit vipers can sense cold objects as well. Pythons and some boas have heat sensitive pits on their lips and can find prey in the same way as pit vipers. Do the snakes “see” an infrared (IR) image in the brain? Apparently so. Recent findings have determined that by way of the trigeminal nerve and the optic tectum the pit has a bimodal sensory function. For example, if the snake has a visual image of its mouse prey it also has an IR image. The optic tectum in the forebrain has a layer of cells subjacent to the visual layer and sight and heat information is shared. The pit membranes are highly vascularized and cool the thermal receptors quickly to prevent false after images.

The origin and function of the pineal eye and its associated gland is mysterious. Fossil fish of the Silurian and Devonian Periods of earth history had a pair of openings on the top of the skull. Modern day lampreys also have such openings.

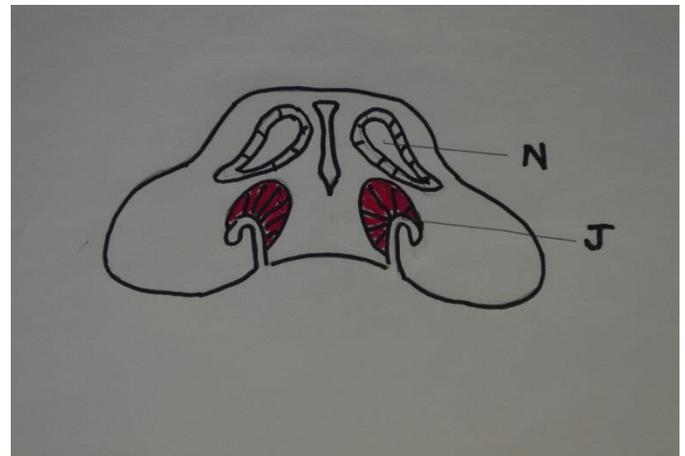
The structure is called the parietal eye in lizards because it is located on the parietal scale on the top of the head. Frogs, salamanders, and sharks also have the eye. It is not found in mammals, turtles, birds, or snakes. The eye has a lens and a retina with rod and cone photo receptors but it cannot form an image. The pineal gland is located in the between the cerebral hemispheres and secretes melatonin. Pineal is Latin for pine cone and the gland is so named because of its shape. The gland and the eye are thought to control circadian and seasonal rhythms of behavior.



Microscopic Cross-Section of Pineal Eye. L – Lens. N – Nerve. R – Retina.

Anyone who has seen a snake flicking its tongue may be able to guess that the snake is sensing its environment. The twin tips of the tongue are inserted into the openings of the Jacobson's Organ in the roof of the mouth. This organ is also known as the vomeronasal organ or VNO and is for chemoreception; a combined sense of taste and smell. Vomer is Latin

for plowshare and the VNO is situated near a bone of that shape. Snakes have few if any taste buds on the tongue and if it smells good to eat it is good to eat. For example, snakes do not eat beef in Nature but captive snakes can be tricked into eating strips of beef that have been left in a cage with mice and picked up the smell of mice. Lizards, cats, dogs, horses, cattle, and pigs also have a VNO but it is absent in adult birds and crocodilians. In turtles it is absent in adults and the embryo. The VNO or Jacobson's Organ is named after the nineteenth century anatomist Ludwig Jacobson for his studies of the organ in mammals.



Transverse Cross-Section through the Snout of a Lizard showing Jacobson's Organ. J – Jacobson's Organ. N – Nasal Passage.

The VNO is vestigial and non-functional in humans. Or is it? The VNO is located on either side of the septum. Humans don't greet each other like dogs and men don't swarm around ovulating women but the sense of smell is important in human behavior. Sebaceous and apocrine glands in the skin produce sex hormones and pheromones, Olfaction and the

endocrine system are associated with emotional state and sexual activity. Maybe we are not so far above the rest of the Animal Kingdom as we would like to believe.

## LICHENS OF THE CITY OF ROCKS

Article and Photos by Russ Kleinman

One of the first things you are likely to see after arriving at the City of Rocks are bright yellow splotches on the large, otherwise beige colored boulders for which the park is known (figure 1). What's going on here? Has there been a paintball party?

Fortunately, nature and not vandalism is responsible for these wonderful patches of color. The organisms creating these colors are *lichens*. Lichens can be just about any color. At the City of Rocks, it seems yellow, orange (figure 2), green, gray and black are common colors for lichens.

What is a lichen? A lichen is actually at least two organisms living together and providing each other some benefit in what biologists usually refer to as a mutualistic arrangement. A fungus provides the scaffolding of the lichen along with shade, some minerals and nutrients, and it retains moisture for the other inhabitant of the lichen— either a green or a blue-green alga. Fungi lack chlorophyll though and so they can't use sunlight to make the sugars necessary to power their own cellular machinery for metabolism,

growth and reproduction. That's how the alga contributes to the partnership—by providing chlorophyll and the photosynthetic machinery to make enough sugar and other energy compounds for their own use as well as export to the fungus.



Figure 1. *Acarospora* (Cobblestone lichen). One of the most common crustose lichens at the City of Rocks. It makes little yellow tiles that are densely adherent to rock.

When we think of algae and fungi, we don't usually associate them individually with hot and dry environments. Algae and fungi are organisms that frequently prefer moist habitats in forest soils or near water. However, when organized into a lichen, the two cohabitants take on

properties that neither one of them alone possesses. In particular, lichens can be among the most desiccation, heat and cold resistant organisms on earth. The ways by which these feats are accomplished are the subjects of ongoing research that could help make our own food crops more capable of withstanding extremes in temperature and rainfall.



Figure 2. *Candelina* (Yolk lichen). A very attractive orange-colored crustose lichen at the City of Rocks that makes a sunburst pattern around the edges.

One of the ways to reduce water loss from the surface of a lichen is to reduce the surface area to volume ratio. At the City of Rocks, you will notice that the undersurfaces of many of the lichens are densely adherent to the underlying rock. The only way to remove most of them is with a chisel. These lichens are known as “crustose” lichens, and they have only their upper surface exposed to the air. Most lichens at the City of Rocks are

crustose lichens. They are the hardiest of lichens.

There are a few lichens at the City of Rocks that have a ribbon-like appearance and that are only partially adherent to the underlying rock. These are called “foliose” lichens. Foliose lichens have both their top surface and some portion of their undersurface exposed to air and thus subject to evaporative water loss. The third major type of lichen morphology is the “fruticose” lichen—these may have only a single holdfast to the rock or bark, are bushy in appearance and they have the highest surface area to volume ratio of the lichen types. You will have to search hard to find any fruticose lichens at the City of Rocks.

There are few collections of lichens that have been made from the City of Rocks for study, and no lichen inventory is yet available. Since some lichens are very sensitive to pollution, knowledge of those lichens currently present compared to a future inventory would be useful to document the effects of pollution in our area over time.

# Membership Application

Friends of City of Rocks State Park, Inc. (FCR)

FCR is a non-profit 501(c) organization dedicated to enhance, preserve and promote park use. Your contribution and membership will give you the satisfaction of helping preserve and protect one of the most beautiful places on the planet.

\_\_\_\_\_ New \_\_\_\_\_ Renewal

Name(s) \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_

Yes, I want to support FCR. Enclosed are my annual membership dues. Dues and donations are tax deductible.

**\*ACTIVE MEMBER: (Voting)**

**SPONSOR (Non-Voting)**

\_\_\_\_\_ \$15 Individual

\_\_\_\_\_ \$25 Friend

\_\_\_\_\_ \$20 Family

\_\_\_\_\_ \$50 Good Friend

\_\_\_\_\_ \$10 Senior (single or couple)

\_\_\_\_\_ \$75 Very Good Friend

\_\_\_\_\_ \$500 Lifetime

\_\_\_\_\_ \$100 Best Friend

\_\_\_\_\_ \$500 Special Best Friend

In addition to my dues, I enclose \$ \_\_\_\_\_ as a donation (optional)

\*Active dues paying members are those individuals who are entitled to vote at annual meetings and MUST participate in at least one of the following. Please check at least one of the following:

\_\_\_\_\_ Hospitality \_\_\_\_\_ Newsletter \_\_\_\_\_ Programs \_\_\_\_\_ Membership \_\_\_\_\_ Publicity  
 \_\_\_\_\_ Garden Care \_\_\_\_\_ Fund-Raising \_\_\_\_\_ Events \_\_\_\_\_ Scrapbook \_\_\_\_\_ Officer

Active Members receive free day admittance to City of Rocks State park

Thank you for your support and interest. Together we can create an awareness of the wonder, fragility, and importance of City of Rocks State Park.

Please send your check to: Friends of City of Rocks State Park, Inc., PO Box 74, Hurley, NM, 88043

Upon receipt of our completed membership application, you will receive a welcome letter, receipt, and membership card. For further information or questions, please call 1-(228) 363-1403.

Official use only

Date Received: \_\_\_\_\_ Ck#: \_\_\_\_\_ Cash: \_\_\_\_\_ Membership Card: \_\_\_\_\_