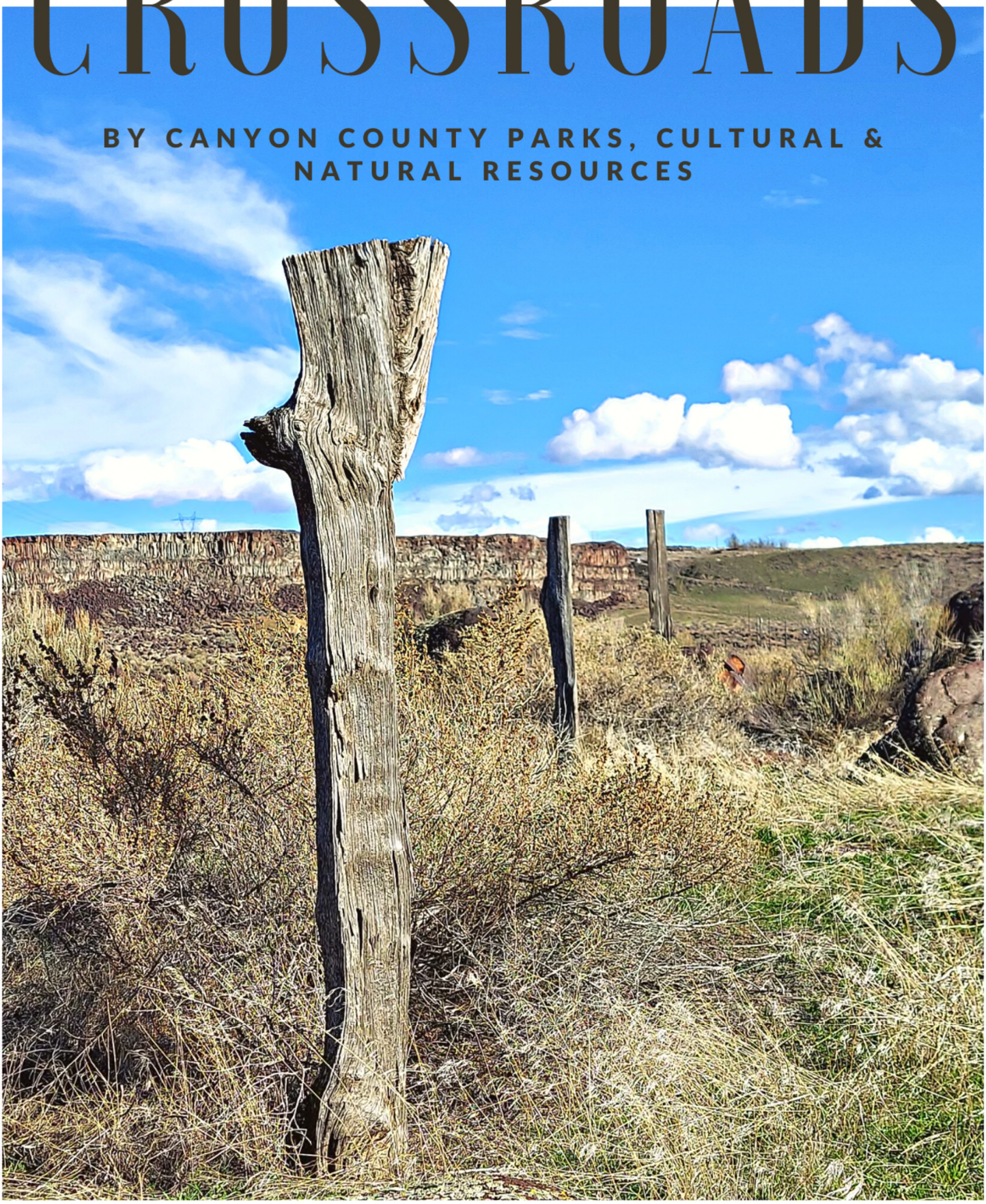
2024

VOL II

CROSSROADS

BY CANYON COUNTY PARKS, CULTURAL & NATURAL RESOURCES



Above: The unique layering of fog, snow, ice, and morning sunlight make the Celebration Park Visitor Center look like a prize-winner. Photo by Larry Haney.

Left: Snow at Celebration Park usually doesn't stick around long, but it's beautiful when it does.

Above: The impromptu lessons are some of our favorites. This cyclist saw some students on the atlatl range during a field trip and stuck around to try it out for himself!

Below: Winter sets in on Maintenance Coordinator Shawn Gray. While most of us huddled inside during the coldest part of winter, Shawn kept the proverbial fires lit and helped keep Celebration Park open.

Above, Left: J-U-B Engineers are working with the department on several improvement projects, and part of this included drone mapping and surveying the park.

Above, Right: The Western Whitewater Club's annual Chili Run in February is always a hit. This event helps boaters learn the dangerous section upriver of Celebration Park on the Snake River.

Left: Canyon County Sheriff's Marine Patrol is an active part of the Chili Run, keeping participants safe.

Above: Dylon Starry volunteers with the Idaho Native Plant Society preparing soil for other volunteers to take home to raise seedlings. These will be given to various entities for local re-wilding efforts.

Left: Interpretive Specialist Brenda Stone helps rake compost into raised beds near the parking lot at Celebration Park. These will be planted with native wildflowers this spring.

Below: Training isn't limited to CPR and rescue. These Interpretive Specialists made sure their archery skills were up to par in preparation for the Lake Lowell field trip season.

P. 6, Above: The springtime view from the Ecology Trail.

P. 6, Below, Left: Interpretive Specialist Paul McGrew gives a tour to the Master Naturalists.

P. 6, Below, Right: Interpretive Specialists Josh Preminger and Larry Haney get into the details of obsidian on the bridge trail.

Left: Boise State University Professor Emeritus Dr. Craig White gives a presentation to Park staff on geology during staff training.

Below: The US Bureau of Land Management National Conservation Area is a dedicated partner. Each year their staff brings their education raptors to supplement our Winter Desert Ecology 5th grade field trips.

CROSSROADS

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Cover: Interpretive Specialist and de facto staff photographer ***Larry Haney*** *took this photo of a fence. It's hard to say for sure whether this is old enough to be an artifact or if it's just old. But as we think about historic preservation this issue, it's a salient reminder that all the things we leave behind will be artifacts one day, too.*

EDUCATION | ARCHAEOLOGY | HISTORY

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FROM THE DIRECTOR:
NICKI SCHWEND

Idaho Archaeology and Historic Preservation Month

If you're reading this magazine, you're familiar with Idaho's first Archaeology Park, Celebration Park (or you will be after reading through this publication). However, there are a few other things related to archaeology in Idaho that you might not be aware of: Idaho has a dedicated Archaeology Month, and Idaho has an Archaeological Society that anyone can join!

The Archaeological Institute of America (North America's largest and oldest nonprofit organization dedicated to archaeology) has a list of State Archaeology and Historic Preservation Months/ Weeks. A total of forty-three states have designated a specific time to organize and promote statewide opportunities for the public to learn about their state's unique archaeology, history and historic preservation.

Idaho's Archaeology and Historic Preservation Month happens in May. Each year, events are held throughout the state to engage and educate the public in various ways. Celebration Park participates every year, and this May will be no exception. See page 14 for specific information. The Idaho State Historic Preservation Office (SHPO) takes the lead in advertising events throughout the state. It has moved from primarily website information to social media, so be sure to like the Idaho SHPO on Facebook and Instagram @idahoshpo to get updates.

Director Schwend with Slim, an education golden eagle that was once owned by Morley Nelson himself. Slim now works with Monte Tish doing educational programs.

Above left, right: Park visitors and guest presenters enjoy programming on flint knapping and cordage-making during Archaeology Month 2023. The event allows guests to try out primitive technology, a skill most people never get the chance to experience.

Idaho Archaeology Society

The Idaho Archaeology Society (IAS) is a nonprofit dedicated to: ***unite those interested in Idaho archaeology, to promote cooperation between professional and amateur archaeologists, to promote the systematic study of prehistoric and historic archaeological sites in Idaho, and to promote public education and professional scholarship relating to Idaho Archaeology.***

Their website is www.idahoarchaeology.org. Here you can find information about events, conferences, lectures, student grants, volunteer opportunities and publications. IAS publishes the *Idaho Archaeologist*, a digital journal containing professional reports and other archaeological articles, photographs, and information. Members get early access to the newest issues. Each year, IAS also organizes a conference at various locations throughout the state, and they participate in Archaeology Month by hosting an Archaeology Fair. This year's fair will be hosted in Basque Park, Mountain Home on Saturday May 11th. (Celebration Park Archaeology Month events are being held the weekend before on Saturday May 4th.)

Join us in celebrating Idaho Archaeology in May and consider joining the Idaho Archaeology Society on an annual calendar basis or become a lifetime member.

CANYON COUNTY PARKS, CULTURAL & NATURAL RESOURCES

DEPARTMENT UPDATE:

ON THE GROUND

Riverside Cleanup

While school programs tend to slow down over the winter months, that doesn't mean our staff slow down. One of Maintenance Coordinator Shawn Gray's winter projects was a massive riverside cleanup at Celebration Park. This involved the Canyon County Facilities department as well as Parks staff using machinery and hand tools to remove several truckloads of overgrown shrubs, weeds, and a dead tree that otherwise blocked access to the Snake River. We very much appreciate Shawn's commitment to the project, as well as the help from Facilities.

Harvesting Tule

Tule reeds, or bulrush, are an aquatic plant native to Idaho. These have been used by Native Americans for thousands of years to create necessary things such as sandals and boats, and even less necessary items, such as toys. Tule toys (pictured inset) are a fun way to practice primitive technology crafts, so this past winter, Interpretive Specialist Johnny Stanciu harvested some tule reeds from the Snake River for staff to use to create tule toys. These are usually shaped like horses, but depending on the skill of the maker, could also look like llamas, giraffes, or even alligators!

Lake Lowell Open

Lake Lowell opened to motorized boating April 15th, which means Parks, Facilities, and Sheriff staff are all working hard to get things ready. This means getting new informational signage on buoys, making sure docks and gangways are safe (and seaworthy), and ensuring marine patrol boats are in good shape for the season. Recreation is an important part of our mission, and we're very appreciative of our partners within the county and other agencies that all lend a hand to help make Lake Lowell safe and enjoyable for all user groups.

CANYON COUNTY PARKS, CULTURAL & NATURAL RESOURCES

DEPARTMENT UPDATE:

IN THE OFFICE

Office Cubicles

Now that the Canyon Crossroads Museum has a new second-story interior mezzanine, we've been hard at work cataloguing the library and turning the space into usable offices. We were able to procure new cubicles and desks and completed the installation in February. This will become the office area for the Historic Preservation Officer, a much-needed position to manage historic preservation efforts within the county. The cubicles will also allow flex space for other staff or researchers to use high-speed internet connections.

Backpack Loaners

Idaho State Parks have some great backpacks you can borrow at most locations, and we thought that sounded pretty neat. We partnered with US Bureau of Land Management National Conservation Area and now have three backpacks at Celebration Park that visitors can borrow for the day for free! Contents include binoculars, bird and wildlife guides, and some pamphlets on nature and Park information. Next time you visit, pick one up in the Visitor Center any day from 10 am to 2 pm and try them out!

Mid-Snake RC&D Annual Meeting

While Canyon County Parks is very involved with the Southwest Idaho RC&D, it isn't the only RC&D in the state. This year, the Mid-Snake RC&D asked former Parks director Tom Bicak to be a guest speaker at their annual meeting in Twin Falls. Bicak spoke on his system of project evaluation, going into detail about the Guffey Bridge restoration during the early years of Celebration Park. The other featured speaker was Idaho State Department of Agriculture director Chanel Tewalt, who spoke on the quagga mussel issue in the Snake River. We appreciate the opportunity to connect and collaborate on these projects across our great state!

CANYON COUNTY PARKS, CULTURAL & NATURAL RESOURCES

DEPARTMENT UPDATE:

EVERYTHING ELSE

New Replica Net

A new "arti-fake" has a home in the Celebration Park Visitor Center—a hand-made net created from dogbane fiber, processed and rolled into cordage via the thigh-rolling method. These cordage strands were then crafted into a historically-correct net. This was created by a friend of the park and Interpretive Specialist Jenna Raino. Jenna is our resident cordage expert, and will be leading cordage classes during Archaeology Month on May 4th. The Visitor Center is open daily from 10 AM to 2 PM, so come see this excellent re-creation.

Outdoor Idaho Screening

Lora Strange was once an Interpretive Specialist at Celebration Park and now teaches at Kuna High School. She was interviewed for the recent Outdoor Idaho special featuring Celebration Park staff (see p. 15) on her role as an outdoor educator. She arranged a special screening of the show on March 18th at the Kuna High School Performing Arts Center. Idaho Public Television executive producer Bill Manny was there to introduce the hour-long special and answer questions after the screening. A very big thanks is due to Lora and her commitment to outdoor education in Idaho!

Library Update

Interpretive Specialists Jessica Sweeney and Jessica Clark have been diligently working on the Dr. Mark Plew Library at Celebration Park. The books are now all organized on shelves, documents are being digitally archived, and plans are in the works to catalogue the entire collection into Librarika—an online library system. "The whole mezzanine project has really come together, and we're very grateful to our staff who volunteered to take on this exacting task," said Director Nicki Schwend.

Archaeology Month
at Celebration Park
May 4th, 2024

Experimental Archaeology

Learn about primitive technology and try your hand at creating cordage and primitive fire-making.

10:00-2:00

Atlatl Contest & Petroglyph Tours

Win a prize on the atlatl range and take a guided tour of the petroglyphs.

10:00-2:00

Vintage Car Show

Get close-up with some of the oldest cars in the state with the Western Idaho Model T Club.

10:30-11:30

Mining Cabin Archaeology

Tour the Halverson Bar and discover the history of early mining. Req: good shoes, lunch, snacks, water.

9:30-3:30

Flintknapping

Experience creating tools from stone with the Idaho Flintknappers.

10:00-2:00

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WORKING WITH LEGENDS

FILMING OUTDOOR IDAHO

If you grew up watching Idaho PBS TV, you'll be no stranger to Outdoor Idaho – Idaho Public Television's long-running (over 40 years!), locally-produced show about the wild places of Idaho. It highlights the natural beauty, the science, and most importantly, the people, that make Idaho the special, diverse place it to is. Throughout its tenure, the program has won hundreds of national and regional awards, including Emmys, as well as New York Film Festival and Edward R. Murrow awards.

Idaho Department of Fish and Game (IDFG) Master Naturalist Program Coordinator Sara Focht reached out to local outdoor education providers, seeking collaborators to film a segment on Master Naturalists in Idaho. We had the unique opportunity to be a part of the show here at Celebration Park. Bill Manny, the executive producer and writer for the show, and videographer Tammy Scardino, filmed an extended and in-depth version of our Winter Desert Ecology program on December 9th, 2023. They also interviewed Programs Manager Dylon Starry (Deer Flat Master Naturalist 2022 cohort) and Interpretive Specialist Robyn Foust (2024 cohort) about the Master Naturalist program, outdoor education, and Celebration Park's exclusive opportunity to educate the public. For Idaho locals, this show is a big deal, and to be featured on it is a once-in-a-lifetime opportunity. A special thanks goes out to Sara Focht at the Idaho Department of Fish and Game and Bill Manny at Idaho Public Television for allowing us to be a part of such a neat experience.

Pictured: Idaho PTV videographer Tammy Scardino filming Parks staff Dylon Starry, Robyn Foust, and Colton Oswald for Outdoor Idaho.

You *Beetle* Not Eat My Milkweed

Summer Calley and her horse, Toby

Showy Milkweed

Red Milkweed Beetle

If you have ever been hiking along the Snake River, or anywhere within Southern Idaho, you may have noticed a variety of bright, eye-catching beetles littering the leaves of a milkweed plant. Even though the name "Milkweed" suggests that this plant is a weed, it is actually a beneficial wildflower that provides nutrients for a variety of beetle species. Idaho is home to five species of native milkweed. These include:

- Showy milkweed (*Asclepias speciosa*), which is the most common and widespread.
- Davis's milkweed (*A. cryptoceras*), which is occasionally found across southwestern Idaho.
- Narrow leaf milkweed (*A. fascicularis),* which is sometimes found in southwestern Idaho.
- Swamp milkweed (*A. incarnata*), which can be found along the Snake River within moist places.
- Spider milkweed (*A. asperula),* which has only been reported twice within southeast Idaho.

Although milkweed is poisonous to many insects and animals due to their toxic compounds (cardiac glycosides), many insects have evolved to be able to feed on milkweed. Some examples of these include the red milkweed beetle (*Tetraopes tetrophthalmus*), the blue (cobalt) milkweed beetle (*Chrysochus cobaltinus)*, and the swamp milkweed leaf beetle (*Labidomera clivicollis).*

The Red Milkweed Beetle

This beetle is most commonly found upon showy milkweed patches from late spring through early summer. Adults are bright red with black warning spots and are about ½ an inch long. The red milkweed beetle is a longhorn beetle, which explains their long, curling antennae. When threatened, the adults will let out a loud squeaking noise. Their food source consists of the leaves, buds, and flowers of milkweed plants. When feeding on leaves, they will cut the leaf veins below where they are feeding. This causes the milky latex within the leaves, which can jam up their mouthpieces, to drain out before consumption. The females will lay their eggs near the base of milkweed plants, which provides easy access for the larvae to burrow through the stem and overwinter within the roots before pupating in the spring. The adults will emerge within early summer of the following year once the milkweed plants begin to bloom.

The Swamp Milkweed Leaf Beetle

As their name implies, these beetles are mostly found feeding on the swamp milkweed variety, which can be found within moist regions along waterways like the Snake River. The swamp milkweed leaf beetle is a half inch long and

Swamp Milkweed Leaf Beetle

Blue (Cobalt) Milkweed Beetles on Milkweed at Celebration Park

shaped like a teardrop with a black head and pronotum (the plate-like structure that covers the thorax of some insects). The shell color ranges from yellow to orange with black to dark blue markings. A quick glimpse may trick your eyes into thinking these beetles are a certain species of ladybug. Like the red milkweed beetle, they too cut the veins of the milkweed leaves before consuming it. The eggs are laid under the milkweed leaves, and after the larvae are hatched and have fed on the leaves, they will then overwinter near the base of the milkweed plant. Once spring arrives, the cycle starts all over again. Because adults sometimes cannibalize eggs, the female lays infertile eggs as decoys to protect the fertilized ones that are laid in a location that has less foot traffic.

The Blue (Cobalt) Milkweed Beetle

This iridescent cobalt-blue beetle ranges from 1/4 to 1/2 an inch long and is found throughout western North America. They will consume any native milkweed species found within the area. Because of their milkweed consumption, these beetles accumulate the toxins found in this plant which serve as a defense mechanism against predators. When searching for these sapphire-like beetles, they can easily be found under flower bunches during the day, and anywhere upon the plant when they become active during the night. These beetles may only be seen a few weeks out of the year since they emerge from late spring until early summer. The adult females lay their eggs on the leaves of the milkweed plants so the larvae can consume the leaf tissues between the veins. This results in a skeleton of the milkweed plant, leaving it dormant until the next year if vast amounts of leaf tissue are consumed.

Will These Beetles Harm the Milkweed?

Fortunately, milkweed beetles mostly do not cause permanent damage to milkweed plants, but a large population can crowd out the monarch caterpillars. The milkweed only becomes damaged if the grubs burrow into the roots and consume a large enough portion to kill the plant. Milkweed beetles are more of a nuisance than a pest. When a large community appears, the best way to eliminate the risk of over-consumption is simply spraying them off with a garden hose.

Blue (Cobalt) Milkweed Beetle

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LILY BROWN

VISITOR SERVICES SPECIALIST

Growing up, I always loved the outdoors. As a child you would often find me covered in dirt, rats' nests in my hair, and full of pure happiness, running around the mountains or through the desert. As an adult, few of those characteristics have changed. I may have fewer knots in my hair but you will still find me covered in dirt and thrilled to be in Idaho's nature. My love of the outdoors can be heavily attributed to my family's influence. My grandparents and parents are all avid outdoorspeople and their passion for exploring the outdoors was handed down to me. One of my favorite activities is asking my grandparents to name any wildflower we come across or to identify birds from sight or song. By doing this I have learned much of my identification skills from them. My parents also contributed to my outdoor education by teaching me how to fish, hunt, camp, and how to be safe while exploring nature.

All of my family's passion led me to pursue further education by attending Northwest Nazarene University. I was able to graduate with my Bachelor of Science in Wildlife Biology and Ecology in 2022. While at NNU, I discovered a deeper knowledge of ecology, herpetology, botany, ornithology, and many other subjects. I also expanded my love of nature from areas around Idaho to the tropics of Costa Rica. I was able to do two summers of research in Costa Rica looking at several species of frogs and exploring the tropics. While I still adore the nature of Idaho and I want to focus my career in this area, my exploration has shown that I love traveling and will continue to explore the wilds of the world. In addition to doing herpetological research, I was an animal caretaker for NNU's animals. The university hosts many species of frogs, snakes, and salamanders that are native to Idaho and beyond. Here, I was able to get hands-on experience with a Gila monster, a young American alligator, poison dart frogs, a caecilian, as well as many other non-native species. In addition to my role as an animal caretaker, it was also while attending Northwest Nazarene University that I gained my first position as an Interpretive Specialist at Celebration Park in 2021.

I had known about Celebration Park due to my family's annual picnics for my Grandpa's birthdays, and I had been to the park for my elementary school's fourth-grade field trip. Like the thousands of students who have been to the park for their field trips, the main tour I remember is atlatl, though I was not very good at it. (Sadly, my two years of working at the park have not greatly improved my skill.) But, my knowledge of the park and ability to give educational tours greatly improved while working as an Interpretive Specialist. The combination of being constantly outdoors, educating guests on archeology and ecology, and the amazing staff has created a job that I love. I have always

known that I would not last long at a job where I was tied to a desk and Canyon County Parks has provided the perfect opportunity to be in nature every day. My time as an Interpretive Specialist also introduced me to the opportunity to teach young children about the area around us and how it functions. I have learned that I love getting to teach children and seeing the topics that spark an interest in them. It is a satisfying moment when you can tell a child is interested in what you are teaching them by their consistent questions and rapt attention. This newfound experience in teaching led me to help run Canyon County Park's Canoe Science in the summer of 2023 where I was able to help kids learn about ecology and boater safety. These teaching moments were some of my favorites since I had more time to connect with the students and many of them came away with a broader knowledge of wildlife around Lake Lowell. I was also able to use my connection to NNU and bring out many of the animals I had cared for while I was a student. The animal show-and-tells were by far my favorite lessons since I was able to teach about herpetology (reptiles and amphibians). I showed the kids native Idaho frogs, snakes, and salamanders and some tropical frogs, including a poison dart frog, native to Costa Rica. The children were able to be hands-on with some of the animals and learn about many of the characteristics that allow our reptiles and amphibians to survive in arid conditions. After my journey as a Canoe Science Camp leader, I was able to return to Celebration Park as an Interpretive Specialist. On my return, I resumed my work on the museum's Color Me Wild project and put many hours into helping develop the booklet on southern Idaho's wildflowers. After a few months of continuing my work as an Interpretive Specialist and working on the museum project, I was given the opportunity to join the full-time staff when the Visitor Services Specialist position became available. It has now been several months since I gained my new position, and I am loving it. I was able to take more responsibility for the Color Me Wild project and added a native gardening development that I am excited to continue. By working with Canyon County Parks, I am still able to be outdoors every day, see the nature and wildlife that I love so much, and I am doing work that I can be proud of. I am excited for the future as I continue my role as the Visitor Services Specialist and I am looking forward to implementing more of my love of the outdoors and my education in wildlife biology and ecology. I also look forward to continuing my yearly picnics at Celebration Park with my family and getting to learn from them, and possibly, getting to teach them more about the area where I work. ■

P. 18, Above: Lily and volunteers planting native seeds.

P. 18, Below: Demonstrating "herps" (frogs, snakes, etc.) to Canoe Science Camp students.

P. 19: Lily at Celebration Park.

Ephemeral Wildflowers of Southwest Idaho

Laura Barbour, Assistant Director

"…Beauty consists of its own passing, just as we reach for it. It's the ephemeral configuration of things in the moment, when you can see both their beauty and their death…"—Muriel Barbery, The Elegance of the Hedgehog

Sometimes the most shortest-lived things are the most beautiful. Or at least beauty impacts us most when it's at its most fleeting. We encounter beautiful things every day—green grass, sunsets, birdsong—without even stopping to absorb them. It's only the transitory beauties—shooting stars, rainbows, sunbeams glancing on water—that become marvels. They resonate with us, forcing us to stop, to notice, to try to extend their brief existence by impressing them into our memories.

In challenging environments (which abound in Idaho) it can be an advantage to be short-lived. Many native wildflowers of the rugged desert or the high mountains have evolved to be ephemeral. They sprout, bloom and set seed all in a relative instant to take advantage of spring warmth and moisture, completing their life cycle before the stresses of the rest of the year—the parched times, the scorching times, the frozen times.

Their very nature makes these ephemeral plants vulnerable. Phenology is the study of life cycles and how they are influenced by seasonal variations in climate and habitat. Ephemeral plants, with their compressed life cycles, are particularly susceptible to disruptions within their environment. Not just time, but soil conditions, precipitation, temperature—all these factors must align in a brief window for these short-lived plants to thrive. If the spring season is dry with little rain to moisten the soil, if a heavy snowfall comes after the plants have begun to grow; if they flower too early before their pollinators have arrived, an entire population might fail to sprout, flower, or to set seed.

Some ephemeral plants are well known but many others are not, even among people who enjoy exploring Idaho's front- and backcountry. Only the lucky ones, who are in the right place at the right time (and are looking) will get to see them: the opalescent bitterroot (*Lewisia rediviva*) bloom over the burnt-black cinders at Craters of the Moon, the slender mariposa lilies (*Calochortus eurycarpus*) twinkling among the grasses of the Boise Foothills; the fritillaries (*Fritillaria atropurpurea*) hiding their checkered heads in the dappled shade beneath the fir trees on Mores Mountain. Their blink-and-you'll-miss-it display transforms their

Spring wildflowers at Craters of the Moon. Photo credit: NPS photo.

Spring wildflowers in the Owyhees.

habitat, the place they dwell, for a brief instant, elevating the steady everyday beauty of the natural landscape into something marvelous.

The bitterroot (also the official flower of the State of Montana) is probably Idaho's best-known ephemeral. It is a true ephemeral perennial: vanishing without a trace into dormancy for most of the year. In spring, a rosette of small tapered leaves emerges from the thawing soil. These succulent leaves often wither away completely before the plant blooms, storing the water and nutrients they've accumulated into their namesake taproots. In early summer they burst into bloom with flowers that are an inch or two across. With a pearly sheen, they float like tranquil white or rose-tinted waterlilies over the bare earth they emerged from. And then (blink!)—they're gone, disappearing completely belowground for the remainder of the year.

Although named after Meriwether Lewis, who "discovered" it, the bitterroot was already well-known and widely used for culinary and medicinal purposes among the Native Americans of the Plains and Northwest. The species name "rediviva" refers to its ability to revive or resurrect from a seemingly dead state. Bitterroot specimens collected by Lewis during the Expedition in 1805 made their way to botanist Frederick Pursh, who described the flowers as "elegant" and "ornamental," with a paper-like texture, in his *Flora Americae Septentrionalis*. One desiccated specimen, Pursh noted, had traveled all the way from Montana back to Philadelphia. Although it had been without soil or water for several years, it returned to life when planted, sending up its characteristic rosette of leaves to the astonishment of the East Coast botanists.

While bitterroot's (*L. rediviva*) range extends across western North America, from British Columbia to northern Arizona (and from west of the Cascades east to Montana and Wyoming), there is a rare bitterroot species that is endemic to Idaho's high country. Sacajawea's bitterroot (*L. sacajaweana*) lives in scattered habitats in the Boise, Payette, Sawtooth, and Salmon-Challis National Forests, at elevations between 5000 and 9000 feet. Only two dozen populations of this extremely rare plant have been documented, and it is found nowhere else in the world but the mountains of central Idaho. It is also rare in that it was the first plant species named in honor of Sacajawea. Like its more widespread bitterroot relatives it is dormant for most of the year, making it especially challenging to research and protect.

Bitterroot, along with Idaho's other ephemeral wildflowers, are the ultimate masters of *carpe diem*. They have only a short window and must take advantage of it or perish. Perhaps they remind us a little of ourselves in this way. That's why their fleeting beauty is so poignant to us: they remind us to make the most of it.

Sacajawea's bitterroot. Photo credit: Edna Rey-Vizgirdas, U.S. Forest Service.

Bitterroot at Craters of the Moon. Photo Credit: NPS photo.

More ephemerals, early bloomers, and easy-to-miss wildflowers to look out for:

White mariposa lily: *Calochortus eurycarpus* (Liliaceae—lily family). Also called sego lilies, these white flowers bloom in the springtime in the high desert and mountain meadows. Near Boise, look for them on the grassy slopes along Bogus Basin Road. The purple patches on each of the three white petals are pollinator guides, catching the eye of bees and beetles. The bulbs are perennial but the plant goes dormant after creating its seed pods, becoming hard to spot among the grasses. Typical bloom time: May-June.*

Purple fritillary: *Fritillaria atropurpurea* (Liliaceae—lily family). This flower with its checkered or mottled head is well-camouflaged in the shady mountain habitats it prefers. The perennial bulbs give rise to narrow leaves in the early spring as the ground thaws. These leaves may emerge without flowering for several years while the plant is storing nutrients and energy for seed production. Once the bulb is big enough, a single stalk will arise with one or more hanging flowers. The purple fritillary flowers in spring and goes dormant in summer and fall. It is also known as spotted mountain bells. Typical bloom time: spring.*

Photo Credit: Dirk Anderson Jr.

Shooting star: *Primula pauciflora/Dodecatheon pulchellum* (Primulaceae—primrose family). Unlike the lilies described above, this showy meadow-dweller does not grow from a bulb. Each plant puts up a basal rosette of lance shaped leaves, and a single, leafless flower stem with 1-25 flowers clustered at the top. The flowers have a projecting yellow center and yellow anthers, and a backwards-swept pink corolla with 5 lobes. It is commonly found in desert habitats, but during extremely dry years the entire plant will die back to the roots and not return until the next spring. Typical bloom time: spring.*

Blue-eyed Mary: *Collinsia parviflora* (Plantaginaceae—plantain family). This miniscule wildflower is easy to overlook as the entire plant often grows only a couple centimeters high. The flowers themselves are only about 3 millimeters across, with a 5-lobed corolla: the top three petals are white and the bottom two are blue or purple. The individual plants are very delicate and wispy-looking, with a spindly reddish stalk. However, if the conditions are right they can form dense ground-cover clusters, turning an entire patch of earth blue while the flowers last. Typical bloom time: spring.*

Glacier lily: *Erythronium grandiflorum* (Liliaceae—lily family). These bright flowers bloom within days of snowmelt. Each stalk supports 1-3 flowers, with six long backwards-curling petals. The bulbs are an important food source for wildlife and were used by indigenous peoples. They are an important resource for hummingbirds like the broad-tailed hummingbird. With earlier snowmelt, glacier lilies bloom earlier as well, becoming out of sync with their migratory counterparts. In some years the lilies finish blooming before the birds arrive, leaving them without the food source that they rely on to complete their migratory journeys. Typical bloom time: April-June.*

Smoothstem blazing star: *Mentzelia laevicaulis* (Loasaceae—Loasa family). This drought-tolerant native plant grows well in sandy, disturbed soils—look for it in sunny road cuts and rocky banks. Its star-shaped flowers are large—up to 6 inches in diameter. Each flower showcases an array of long, slender yellow stamen filaments that give it the look of an exploding firecracker. These spectacular flowers are hawkmoth-pollinated and open at dusk. They stay open overnight but close by afternoon. This species does not have an ephemeral life strategy but its flowers are easy to miss as they are closed for much of the day. Typical bloom time: summer to early fall.*

**Bloom time depends on elevation, aspect, weather, and other local conditions.*

Dwarf purple monkeyflower: *Diplacus nanus* (Phrymaceae—Lopseed family). This plant is very small but its flowers form a colorful carpet on patches of sandy soil in the spring. Its flowers are a vivid pink, with yellow and purple markings on the throat. Like many desert annuals, it pursues different reproductive strategies in different conditions. In a dry year each plant grows about 1 centimeter tall and produces one relatively large flower (about 1 centimeter in diameter), devoting its limited resources to seed production. In wetter years the plants can grow larger (10 centimeters) and have branched stems bearing many flowers. Typical bloom time: spring.*

Lava Comes to Life!

At Idaho's Craters of the Moon National Monument, the ephemeral wildflower bloom is on full display each spring. Plants that live on the forbidding lava fields and ash slopes contend with poor soils, drought, and extreme temperatures: in this high elevation region (6000 ft), surface temperatures surpass 150 °F in the summer, while in the winter the area can be bitterly cold and receive several feet of snow. Many of the Monument's 750 plant species complete their reproductive cycle before the heat peaks, so the best time to see the wildflower bloom is typically in June. Check the Craters of the Moon website for updates on wildflowers and other happenings in the area.

Web: *https://www.nps.gov/crmo/learn/nature/wildflowers.htm* Facebook: *https://www.facebook.com/CratersoftheMoonNPS*

Plant Guidebooks:

- *A Field Guide to Plants of the Boise Foothills* (Bureau of Land Management)
- *Idaho Mountain Wildflowers: A Photographic Compendium* by A. Scott Earle & Jane Lundin
- *Sagebrush Country: A Wildflower Sanctuary* by Ronald J. Taylor

E-resources:

- *Bogus Basin Wildflower Guide (https://bogusbasin.org/programs/environmental-education)*
- *Consortium of PNW Herbaria (https://www.pnwherbaria.org/)*
- *Idaho Native Plant Society (https://idahonativeplants.org)*
- *iNaturalist (www.inaturalist.org)*
- *Treasures of the Boise Front (https://boisefrontnature.com/)*
- *USDA Plants (https://plants.usda.gov)*

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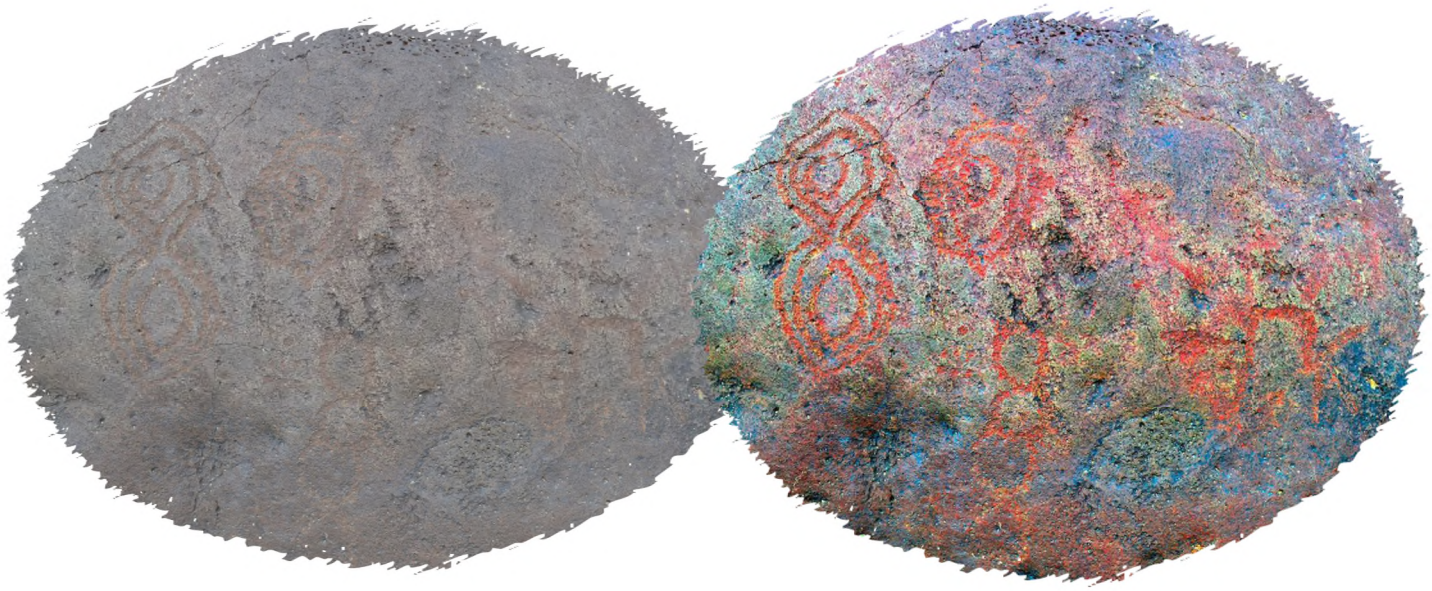


DStretch:

an imaging tool for archaeology and beyond

Nicki Schwend & Tom Bicak

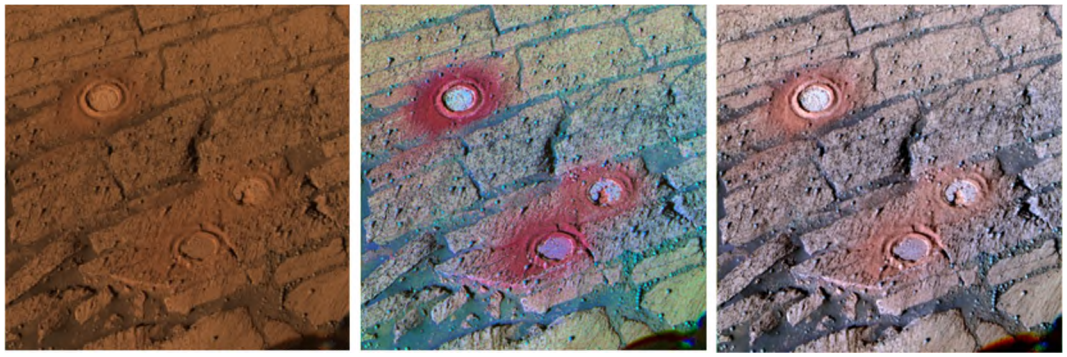
Observation is central to archaeological study. We very frequently want to get a better look at whatever is in front of us. Since we are fundamentally adapted to survive on the veldt, we squint, relocate, climb a hill, a tree, or excavate. Eventually people began making machines to see what was formerly outside of their sensory capabilities. Canyon County Parks, Cultural and Natural Resources, Idaho, uses digital cameras and a fast-calculating device to enhance our view of petroglyphs. We use a little mathematics to reveal what was invisible to all of us.

Canyon County Parks, Cultural and Natural Resources is attempting to catalogue the rock art at Celebration Park and Map Rock area, Canyon County, Idaho, U.S.A. There have been many unpublished surveys of Rock Art in Canyon County, but none of these are comprehensive or complete. These surveys, the results of associated excavations and attempts at dating the petroglyphs have led to a variety of disparate conclusions as to who made rock art, its age and what it means. To begin to sort out the answers to these questions, our survey will take a close and careful look at the petroglyphs to record and catalogue the most accurate description of the Celebration Park rock art elements to date. Mindful that there is more rock art than one can see with the naked eye, we are employing a decorrelation stretch of digital photographs with Dr. John Harman's DStretch algorithm, a plugin for ImageJ. We will provide examples of DStretch images from two different sites in this article: a pictograph site and a petroglyph site.

Decorrelation Stretch

Jet Propulsion Laboratory in Pasadena, California U.S.A developed the Decorrelation Stretch algorithm in the 1990s (Alley 1996). NASA uses it to enhance images generated during Mars missions (Figure 1). Decorrelation stretch is an algorithm that was initially applied to remote sensing images. Aerial photos and satellite images often have poor color contrast, and decorrelation stretch uses an algorithm to intensify subtle differences in color. Decorrelation stretch produces "false color" images. The algorithm enhances, expands (stretches) hues that differ from the original image.

Figure 1: Decorrelation Stretch of Mars Images. *Image Credit: NASA/JPL/Cornell*



The process only enhances color differences in the digital image data. To be clear, Decorrelation Stretch does not add or delete data that make up the photographic image. It uses descriptive statistics and only the existing data to reveal otherwise unseen relationships. It is a data visualization tool. Data in a digital image is encoded in the pixel. Typically, there are three channels, RGB or red, green, blue encoded in a color image. The values assigned to a pixel are derived from the reflected light coming off of the imaged subject. The pixels that comprise the image are a bit map or the data set for statistical analysis. Data used in Decorrelation Stretch statistics is assumed to be Gaussian or near Gaussian. However, the process is insensitive to even substantial deviations from a normal distribution including bimodal and multimodal data sets. The greater the deviation from a Gaussian data set, the less revealing the Decorrelation Stretched image. Complex, diverse images or data sets yield better results than uniform data sets like water, glass, or snow. In other words, more variable data yields more visually dramatic results.

The left image in Figure 1 is the approximate true color rendering of the slope of Endurance Crater on Mars after the Opportunity exploration rover's rock abrasion tool ground into three different rock layers (circles in image). The two subsequent pictures (center and right) are the same image processed using decorrelation stretch. The exaggerated (stretched) colors assist scientists to determine the compositional and textural variations in rocks on Mars (NASA 2004).

Decorrelation Stretch Algorithm

A common way to visualize a large, complex data set that varies spatially is to employ a principal component transformation. RGB channel data on the pixels are considered transformation vectors; there are three defined as eigenvectors. A principal component analysis coupled with Karhuenen-Loeve transformation, a linear transformation or rotation in multi-dimensional space forms the basis of the decorrelation stretch. A linear transformation adds, subtracts, or otherwise treats each datum identically so that the resulting distribution is relative to the original. In this case, the linear transformation rotates each datum the same amount. The eigenvectors are normalized with another linear transformation that rescales the data. The "stretch" image is produced by a linear transformation that rotates the vectors back to their original coordinates. For a detailed description of the mathematics of decorrelation stretch see 1996 Jet Propulsion Laboratory Document *Algorithm Theoretical Basis Document for Decorrelation Stretch* (Alley, 1996).

Figure 2: Dr. Jon Harman

DStretch Plugin to ImageJ

DStretch is a computer program plugin for ImageJ, a free imaging software that was developed at the National Institutes of Health for medical research purposes. DStretch was "written specifically for rock art enhancement" by Jon Harman (Figure 2). Jon has a PHD in Mathematics from UC Berkley, spent a career in medical imaging, and was able to combine these skills and his love of archaeology to create the DStretch program. This tool applies decorrelation stretch transformations to rock art images "at the press of a button." Pictographs often fade dramatically over time, and DStretch enhances and "recovers" pictographs that may be invisible to the unaided eye. Because DStretch works by stretching hue distributions to increase color contrast, it works best when applied to images that already show some differences in hues. Petroglyphs are more resistant to DStretch enhancement because petroglyph images have less color differentiation to start with. However, DStretch enhances faint petroglyphs, especially in places like Celebration Park, where there are slight color differences between the petroglyphs themselves and the patina

ImageJ
Image Processing and Analysis in Java

(desert varnish) of the surrounding rock.

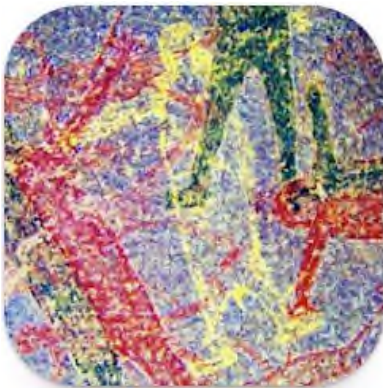
DStretch is especially useful for analyzing pictographs. Pictograph panels in general have more diverse reflecting surfaces than petroglyph panels. The decorrelation stretch process is sensitive to the diversity of hue, value, and texture of a panel. A painted polychrome mural will yield more information than a petroglyph panel with just subtle variations in the value of a few or even two hues. The DStretch process has the capability to reveal and enhance superimpositions, faint elements, and other perturbations of artwork, for both pictographs and petroglyphs but the results for pictographs are more dramatic.

With DStretch, one can vary the colorspace of digital images before decorrelation stretch. A colorspace is a mathematical representation of color. Colorspaces have three dimensions. RGB are the most common dimensions in digital imaging. There are eight corners in a colorspace, three are RGB, three are cyan, magenta, and yellow (CMY) and one black corner and one white. DStretch has several preset colorspaces created by linear transformations, for image analysis and there is the capability for the user to create his or her own colorspaces. Colorspaces have a three-letter name, like RGB, YDS, YBR, YBK, LDS, LRE, and YUV. Each colorspace calculation yields different results.

For your computer:

www.imagej.net/software/imagej/

Prior to using DStretch, you must first download ImageJ, a public domain Java image processing program (available for Windows, Mac OS, Android, Linux and Raspberry Pi). The ImageJ website not only contains the application downloads and instructions but also: the source code, helpful documents, user guides, and example images. The DStretch plugin, however, is not available here; it must be purchased directly from Jon Harman via the DStretch website. (www.dstretch.com)



Purchase via the DStretch website:

(www.dstretch.com)
To obtain the DStretch plugin for ImageJ and be able to use DStretch on your computer, you must pay a nominal fee of $50 and email Jon Harman at DStretch@prodigy.net.

There is a direct link to pay ('donate') using most major credit cards. He will email you the plugin with instructions on how to install the plugin into ImageJ.

This website was developed by and belongs to Jon Harman. It has DStretch presentations (some with pdfs and videos), information about DStretch on phones and tablets, DStretch slide shows, and even tutorials. The link 'DStretch Help' (below the Tutorials image) contains other helpful information such as how to use Batch mode to run DStretch on multiple files at once.

In the field, on your phone or tablet:

A more condensed version of DStretch is available for purchase ($19.99) and download as an app on your Android or iPhone, making it a useful tool in the field.

Both versions of the application use eight enhancements selected by Jon Harman because they enhance the colors most commonly seen in rock art sites:

Red pigments:
- CRGB: matrix, fast, good for red pigments.
- YRD: colorspace, fast, good for red pigments.
- YRE: colorspace, fast, extreme red enhancement.
- RGBO: matrix, fast, good for red pigments.

Yellow pigments:
- YYE: colorspace, fast, makes yellows into dark browns.

Yellow and reds:
- YDT: colorspace, fast, closer to LDS than YDS, yellows and reds.

Blue or black pigments:
- YBK: colorspace, fast, good for blue or black pigments.

White pigments:
- YWE: colorspace, fast, good for white pigments.

Once purchased and downloaded you do not need wi-fi or a phone connection for this application to work. This allows for using DStretch in remote areas while in the field. You can load images from your camera gallery or you can take a picture directly in the application; simply choose the camera or gallery options at the bottom of the app. The gallery selection will load the original image to the application. Once an image is taken or loaded, there will be the 8 applications you can use at the bottom of the screen, along with the option to return to the 'Camera' to take a new photo, to go to the 'Gallery' to select a new image, to 'Save' images (original or DStretched), or to 'Reset' a DStretched image to the original photo.

The settings option in the application allows you to change the scale or strength of the enhancement, change the saturation (0 for grayscale, 1 for normal), change which enhancements are used, and reset the image.

For additional tutorials, visit the following website: http://www.sefcik.com/p/dstretch.html

aDStretch

available on Google Play Store

iDStretch

available on Apple App Store

Other Uses: artifact analysis, geomorphology, and archaeological site detection

Although DStretch was developed for rock art imagery, it has been found to be a useful tool for other purposes and in new ways. Researchers at the Shanghai Institute of Ceramics of the Chinese Academy of Sciences employed DStretch to study crackled glaze of Guan wares from the Southern Song dynasty (1127-1279 AD) to compare their crack morphology to imitation Guan ceramics (Lahlil et al. 2013).

In 2010 when the Icelandic volcano Eyjafjallajokull erupted, it "emitted clouds of fine-grained ash" that blew over the Atlantic and Europe, "halting flights of most commercial aircraft for nearly a week in a controversial shutdown with economic impacts in the billions." Scientists with the Global Volcanism Program (a project of the Smithsonian Institution) began using DStretch to process satellite images to discriminate between normal atmospheric clouds and the volcanic ash plume that required halting flights (Wunderman 2011).

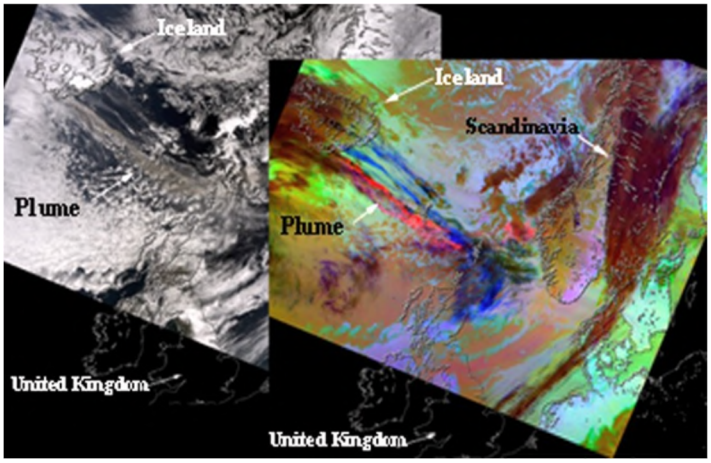


Figure 3: Left, true color image; right, Dstretched image of Eyjafjallajokull volcanic eruption cloud, Iceland, 2010.

Archaeologists have recently begun using DStretch on aerial imagery from UAS (unmanned aerial systems) to assist with identification of archaeological sites and features. It is found to be an affordable and easily accessible tool useful in revealing site details inaccessible to other methods at such a rapid return rate. Other techniques, such as ground penetrating radar, require significantly more time and funding (Potter et al. 2023).

Danskin Rockshelter Pictographs:

Danskin Rockshelter (10-EL-01) is located approximately 70 miles southeast of Boise, Idaho, on the South Fork of the Boise River. This Rockshelter on the north side of the Boise River is composed of two south-facing overhangs at the bottom of a large rhyolitic outcrop. First documented by Richard P Erwin in 1929, this site is well known for its numerous pictographs (Erwin 1931).

The pictographs at Danskin Rockshelter were recorded in detail by Carolynne Merrell and Katherine Hamlett (2007) on behalf of the USDA Forest Service, Boise National Forest. The following references to pictographs will follow the pre-established descriptions and panel references as defined by Merrell and Hamlett in their report. The photographs presented in this article belong to the authors of this article.

Figure 4: Danskin Rockshelter pictographs, Elmore County, Idaho; "Panel 3" bottom section overview (as described by Merrell and Hamlett 2007).

Left, original photo; right CRGB enhances red pigment, matrix.

The Figure 4 petroglyph panel above is described as containing two bison with horns, tally marks above the bison, two horses - each with riders (one carrying a shield), a large three toed bird, and an anthropomorphic figure with a curved line fringed on the topside (Merrell and Hamlett 2007).

Merrell and Hamlett (2007) describe the petroglyph in Figure 5 as an element that "is below a long line of red ochre dots... (it) shows a black circle with short stubby spokes… inside the circle are two parallel red-orange lines… the creamy yellow or buff thumbprint type marks… appear to alternate with the black spokes."

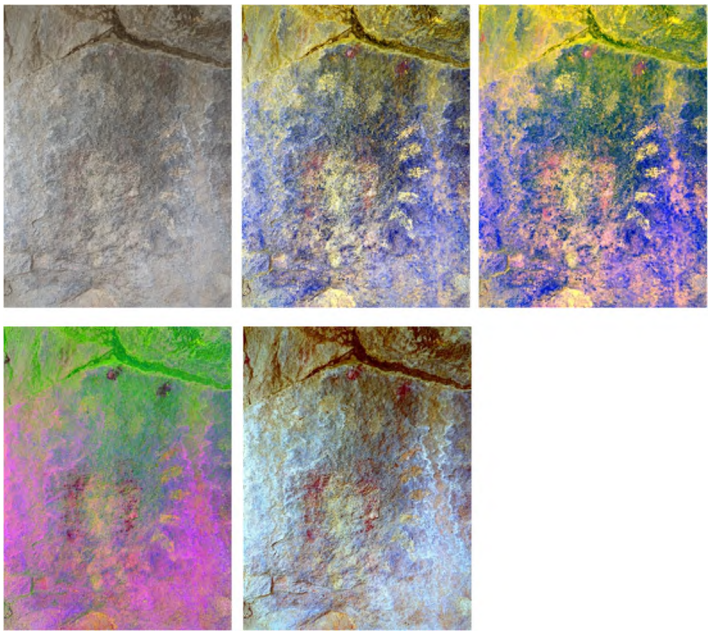


Figure 5: Danskin Rockshelter pictographs, Elmore County, Idaho; "Panel 3" upper right corner with buff, red-orange and black pigments (description by Merrell and Hamlett 2007).

Top left, original photo; top center, YDT enhances yellows and reds; top right, YBK enhances blue or black pigments; bottom left, CRGB enhances red pigment, matrix; bottom right, YRD enhances red pigments.

Figure 6: Danskin Rockshelter pictographs, Elmore County, Idaho; "Panel 9c"; Anthropomorph with upraised arms and bisected oval (description by Merrell and Hamlett 2007).

Left, original photo; center, YRE extreme red enhancement; right, CRGB enhances red pigment, matrix.

Celebration Park Petroglyphs:

Celebration Park is a Canyon County property in Idaho. It is located five miles south of Melba, Idaho at the mouth of the Snake River Canyon which cuts through the Snake River Plain. Interbedded basaltic rock, Tertiary and Quaternary lakebed sediment topped with a shifting mantle of loess characterize the Plain.

Dense deposits of Bonneville Flood Melon Gravel fill the river terraces forming a felsenmeer. Gravels range in size from a few meters in diameter to typical, underfoot gravel size, and all sizes in between. The Melon Gravel deposits are the result of the Bonneville Flood which occurred about 17,400 years ago (Willsey 2017). The Melon Gravel is much more abundant north of the Snake River than on the south side. Escarpments of columnar basalt to the north and Guffey Butte to the south hem in the Melon Gravel Fields on the canyon floor.

Desert varnish covers the exposed portions of the Melon Gravels at Celebration Park. This rock coating is composed mostly of iron and manganese oxide and oxyhydroxides. The matrix traps clay and detrital materials. Various biotic and abiotic materials become embedded in the matrix as the varnish accrues over time.

Figure 7: Celebration Park petroglyph panel

Top, original photo; bottom YBK enhances blue and black pigments.

There is disagreement as to the processes of desert varnish formation. The present and accepted process is a series of dissolution and reprecipitation events resulting in the formation of the manganese-iron matrix and the remaining materials are the result of dust deposition. Desert varnish traps inordinately high concentrations of the cosmic dust Beryllium-7 (Berardellil 2006) derived from gamma ray bombarded ozone in the outer stratosphere. The patination process encumbers cosmic and terrestrial dust thus it is not free to dissipate across the surface of the earth. Indigenous peoples created the rock art at Celebration Park by pecking

Figure 8: Celebration Park, heavily patinated petroglyph panel representing potentially the oldest petroglyphs in the Park area.

Top, original photo; bottom LAB enhances black and white, good for general purpose.

or abrading the surface of the gravels thus removing the varnish and exposing the native stone. Because the process of patination is continuous, more recent petroglyphs are brighter than older art elements. Old elements may be barely discernible because of prolonged patination.

Conclusion

DStretch was designed to enhance rock art images, yet it is currently finding expanded uses in the field of Archaeology and incidental uses in other scientific fields. It can be used in remote areas without wi-fi or phone connection. No data is deleted from or added to the original photographic images. It uses descriptive statistics and existing data to reveal otherwise unseen relationships meaning it is scientifically replicable. DStretch is an accessible and inexpensive imaging tool that is fast and easy to operate, and its use in remote environments makes it an ideal tool for archaeologists and other scientists who need to see data that's hidden to the naked eye. ■

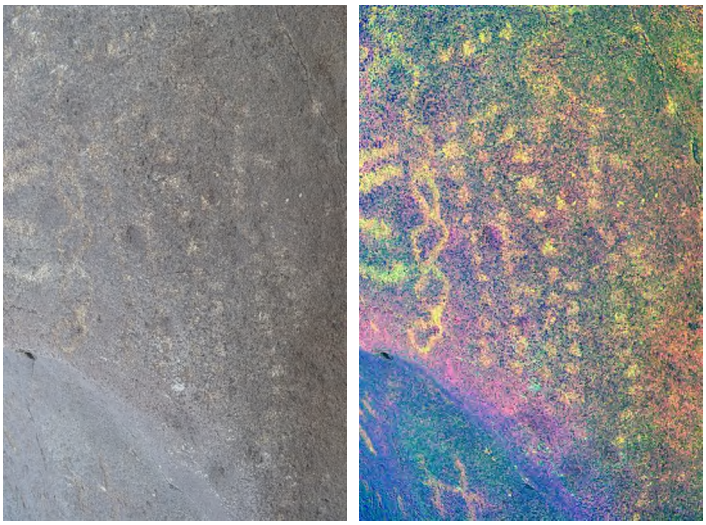


Figure 9: Celebration Park petroglyph panel

Top, original photo; bottom YBK enhances blue and black pigments.

Figure 10: Celebration Park petroglyph panel

Top, original photo; bottom YYE enhances yellow, yellow turns to dark brown.

Canoe Science Camp

Canoe Science Camps are learning-focused STEM summer camps for 10-12 year-olds interested in exploring the outdoors through science and recreation.

- Collect water quality data using scientific instruments
- Use the scientific method to learn about ecology, & hydrology
- Develop recreational paddling and hiking skills
- Receive paddling safety certification

Trained adult guides in each canoe will ensure safety and provide a fun and supportive learning environment.

This program runs Monday-Friday, 9 AM to 2 PM, and is offered at Lake Lowell Park in Nampa.

Registration fee: $50/child

ParksPrograms@canyoncounty.id.gov
208-455-6022

Schedule: Four one-week sessions in June & July.

1st Session: June 10-14,
2nd Session: June 17-21,
3rd Session June 24-28,
****July 1-5 OFF****
4th Session: July 8-12

@canyoncountyparksdept **208-455-6022** **Parks@canyoncounty.id.gov**

Now Open!

Color Me Wild Exhibit At Celebration Park

Come visit the newest museum exhibit at Celebration Park! The Color Me Wild exhibit focuses on native plants and their importance to ecosystems, wildlife, and humans.

Explore concepts of precipitation, elevation, and Leave No Trace while journeying through the museum.

We also invite you to walk throughout the park and see the new plant starts that were planted in conjunction with the museum opening. Native shrubs and wildflowers are everywhere, so keep a lookout for them!

Now Open Daily! 10:00 AM—2:00 PM

@canyoncountyparksdept 208-455-6022 Parks@canyoncounty.id.gov

Desert Studies Institute Workshops May 18—July 16, 2024

Late Pleistocene Megafauna

May 18 & 19, Allison Wolfe

38 genera of mostly large mammals went extinct in North America at the end of the Pleistocene—but to this day, no one is exactly sure why. This workshop will focus on the hotly-debated topic of what caused these extinctions. Did humans hunt them to extinction? Did climate change or disease cause their demise? Or is it not that simple? You'll learn about the different theories and the debates that are still raging amongst scientists today, dive into the actual archaeological and paleontological evidence yourself, and discover how solving this mystery can be applied to modern wildlife conservation and might help to prevent future extinctions.

Field Trip, Cross-listed with Anthropology, Biological Sciences, and Environmental Studies. 1 credit.

The Long-Billed Curlew

May 23 & 24, Heather Hayes

The Long-Billed Curlew: Tracking a Species of Greatest Conservation Need. This 2-part workshop focusing on Long-billed Curlews invites participants to join a research biologist for a power point discussion and a morning out in the field to gain experiential knowledge of what it means to be a curlew on public lands. Required reading material will be provided before the workshop to introduce the species, the current issues facing the southwest Idaho population and what studies are being conducted ot learn more about the dramatic localized decline. The field trip portion will be conducted on the Morley Nelson Snake River Birds of Prey National Conservation Area south of Boise. We will locate curlews during the morning to observe them exhibiting territorial flight displays, establishing and defending territories, as well as courtship displays that may have started since their arrival back to their breeding grounds. Field Trip. NOTE: Students are responsible for their own field trip transportation. NOTE: The field trip on day 2 will be conducted on the Morley Nelson Snake River Birds of Prey National Conservation Area south of Boise. NOTE: Walking Field Trip.

Field Trip, Cross-listed with Anthropology, Biological Sciences, and Environmental Studies. 1 credit.

Ancient Peoples of Southern Idaho

June 12 & 13, Mark Plew & Nicki Schwend

This workshop reviews the prehistory of Southern Idaho from its earliest behinnings some 16,000 years ago to peoples at the time of European contact. The first day of the workshop will consist of on-campus PowerPoint lectures and demonstrations. The second day will meet at Celebration Park—Idaho's only Archaeological park, where additional presentations will be presented prior to visits to and discussions of the park's archaeological sites. The workshop will be held at Celebration Park.

Field Trip, Cross-listed with Anthropology, Environmental Studies, and History. 1 credit.

Desert Ecology

June 4 & 5, Nicki Schwend & Laura Barbour

Desert Ecology is a two-day workshop combining interpretive hikes, short lectures, and introductory field research and data collection. The course explores the ecology of one of our region's most striking arid landscapes—the Snake River Canyon. Participants will learn about how native plants and animals, as well as human cultures, have adapted to contend with the challenges of desert environments. While investigating the present-day ecology of local landscapes, students will also learn about their geologic history—how they were shaped by everything from catastrophic floods, ancient lakes, and volcanic activity. We will learn how the flora and fauna of this landscape have continued to develop since the end of the last Ice Age, and we will examine human history in this area over that same time span. The workshop will be held at Celebration Park.

Field Trip, Cross-listed with Anthropology, Biological Sciences, and Environmental Studies. 1 credit.

Great Basin Ethnobotany

June 9 & 10, Jennifer Cuthbertson

This workshop will focus on ecological interactions in pre-settlement shrub-steppe ecosystems in the northern Great Basin (e.g. the ecological roles of sagebrush, jackrabbits, ground squirrels, badgers, raptors, coyotes, and many other iconic shrub-steppe species) and how they interacted to form a functional ecosystem. The course then shows how human activities are causing the collapse of this ecosystem. On campus the first day and a field trip the second day to see examples of topics discussed on day one. NOTE: Students are responsible for their own transportation.

Field Trip, Cross-listed with Anthropology, Biological Sciences, Environmental Studies, and Geosciences.1 credit.

Minidoka: Desert Tragedy

June 20 & 21, Todd Shallat

The WWII legacy of Japanese-American incarceration is closely tied to mythic perceptions of Idaho as vast boundless empty space. This workshop grounds the tragedy in its sterile landscape. Topics include war hysteria, race relations, legal challengers, masterstrokes of visual propaganda, and liberation through poetry and art.

Field Trip, Cross-listed with Anthropology, Environmental Studies, and History. 1 credit.

The Bonneville Flood

June 20 & 21, Jerry Jerrems

Pleistocene Lake Bonneville unleashed its fury on the Snake River Plain some 17,000 years ago. In its wake it swept away the old landforms while creating new ones. The flood tossed boulders the size of small houses—what geologists call melon gravels. Swept away were animals and plant life as the Snake River corridor was reconfigured. Of interest is the possibility that the event was witnessed by first Americans. This workshop provides an overview of the event and its impacts. Field Trip. NOTE: Students are responsible for their own transportation to Celebration Park. NOTE: Walking Field Trip.

Field Trip, Cross-listed with Anthropology, Environmental Studies, and History. 1 credit.

Death of an Ecosystem

June 22 & 23, Eric Yensen

This workshop will focus on important ecological interactions in northern Great Basin ecosystems. Learn about the ecological roles of sagebrush, grasshoppers, ground squirrels, badgers, raptors, coyotes, and many others; how they interact to form a functional ecosystem; and how human activities are causing the collapse of this ecosystem.

Field Trip, Cross-listed with Anthropology, Biological Sciences, Environmental Studies, and Geosciences. 1 credit.

Knowing Fish

July 15 & 16, Chris Waiser

Knowing Fish is a two-day workshop focusing on the identification, ecology, and conservation of fishes in the Boise River watershed. The workshop combines lecture, group discussion, laboratory work, and field study. Field study will involve collecting fishes using standard research protocols from a variety of riverine habitats. Participants must be in good physical condition and comfortable walking in flowing water.

Field Trip, Cross-listed with Anthropology, Biological Sciences, and Environmental Studies. 1 credit.

Desert Studies Institute

The Desert Studies Institute (DSI) was established in 1997 as a cooperative program between the Department of Anthropology at Boise State University and Celebration Park, which is operated by Canyon County Parks, Cultural & Natural Resources. Each year the Desert Studies Institute provides a broad range of academic offerings of interest and value to students, teaching professionals, Idaho's citizens, and visitors.

The mission of the Institute is to provide educational programs and scholarly presentations concerning the prehistory, history, ecology, and politics of Idaho's desert environments and deserts worldwide. The programs are presented to enrich the understanding and appreciation of complex desert ecosystems in Idaho and to promote their perpetual preservation as educational resources for the future.

REGISTRATION

Registration is now open on ***my.boisestate.edu***.

FOR MORE INFORMATION

If you have questions, call Boise State Summer Sessions/Extended Studies (208) 426-1709 or visit boisestate.edu/summer.

FACULTY

The faculty of the Desert Studies Institute are selected annually on the basis of their expertise in areas relating to the objectives of DSI. Faculty from Boise State University and the region form the core of the instructional faculty.

COST

The Desert Studies Institute are charged the summer per credit rates. There may be additional class fees. Learn more at boisestate.edu/summer.

The Desert Studies Institute workshops combine classroom instruction with field experiences appropriate to an integration of knowledge concerning desert environments.

Spring Field Trips

Spring is our busiest season of the year, with concurrent field trips at Celebration Park and Lake Lowell Park. We enjoy the good weather and emerging plants and animals, but mostly we enjoy seeing the kids and getting to be a part of their school curriculum. We'd like to extend our thanks to all the teachers, school staff, bus drivers, and school volunteers who all work so hard to bring nearly 5,000 students to Canyon County Parks field trips this spring!

SIS =	Stories in Stone
LL =	Lake Lowell
WLF =	Wildland Fire
EFE =	Environmental Field Experience

Vale	3/14/2024	SIS
College of Idaho	3/19/2024	SIS
Johnson Homeschool	3/19/2024	SIS
Sage Intl. School of Middleton	3/20/2024	SIS
Sherman	3/21/2024	SIS
Greenhurst	3/22/2024	SIS
St Paul's	3/27/2024	SIS
Everwild	3/25/2024	SIS
Oregon Trail Mennonite School	3/28/2024	SIS
Sage Intl Boise	3/29/2024	SIS
Wilson	4/1/2024	SIS
Willow Creek	4/2/2024	SIS
East Canyon	4/3/2024	WLF
East Canyon	4/4/2024	WLF
Chief Joseph	4/5/2024	SIS
Dallas Harris	4/8/2023	SIS
Fruitland	4/9/2024	SIS
Fruitland	4/10/2024	SIS
Wilson	4/10/2024	LL
Homedale	4/11/2024	SIS
Garfield	4/12/2024	SIS
Lake Hazel	4/15/2024	SIS
Riverside	4/16/2024	SIS
Midvale	4/17/2024	SIS
Pierce Park	4/18/2024	SIS
Sage Intl Middleton	4/18/2024	LL
Nampa Christian	4/19/2024	SIS
Sacajawea	4/22/2024	SIS
Riverside	4/23/2024	EFE
Peace Valley	4/24/2024	SIS
Nyssa	4/24/2024	LL
Endeavor	4/25/2024	SIS
Iowa	4/25/2024	LL
Sacajawea	4/26/2024	SIS
NOVA	4/29/2024	SIS

Hillside Jr High	4/30/2024	SIS
Peace Valley	4/30/2024	LL
Star	5/1/2024	LL
Hawthorne	5/1/2024	SIS
Washington	5/2/2024	LL
Koelsch	5/2/2024	SIS
St Ignatius	5/3/2024	SIS
Lakevue	5/6/2024	SIS
Grace Jordan	5/7/2024	SIS
Middleton Heights	5/7/2024	LL
Basin	5/8/2024	SIS
Shadow Butte	5/8/2024	LL
Purple Sage	5/9/2024	SIS
Roosevelt	5/9/2024	LL
Liberty	5/10/2024	SIS
Whitney	5/13/2024	SIS
Fort Hall	5/14/2024	SIS
Andrus	5/14/2024	LL
Maxine Johnson	5/15/2024	SIS
Cole Valley	5/16/2024	LL
Central Canyon	5/16/2024	SIS
Cole Valley	5/16/2024	LL
Birch	5/17/2024	SIS
Lowell	5/20/2024	SIS
MOSAICS	5/21/2024	SIS
Heritage Community Charter	5/21/2024	LL
Marsing	5/22/2024	SIS
Carberry	5/22/2024	LL
Lake Ridge	5/23/2024	LL
Park Ridge	5/23/2024	SIS
New Horizons	5/24/2024	SIS
Nyssa	5/28/2024	SIS
Silver Trail	5/28/2024	LL
Project Impact STEM Academy	5/30/2024	SIS
Cherry Gulch	5/31/2024	SIS

BUS *Scholarships*

SPRING WINNERS ANNOUNCED

10 Schools

61 schools were entered in the bus scholarship drawing and a lottery system picked ten at random. Each school received $150 to help fund transportation to and from Canyon County Parks field trips.

Wide Reach

Winners included six schools in Canyon County, but also schools in Ada, Gem, Payette, and Washington Counties, allowing students from all across southern Idaho to experience Canyon County Parks programs.

Generous Donors

These awards were made possible by generous grants and donations by individuals and groups committed to ensuring that the educational opportunities we provide are accessible to the greatest possible number of teachers, schools, and students in our region.

CONTACT US

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208-455-6022
www.canyoncounty.id.gov/parks

CANYON COUNTY
PARKS, CULTURAL & NATURAL RESOURCES

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Photo by Larry Haney