Zion National Park News

National Park Service
U.S. Department of the Interior

Nature Notes

The Lush Desert

High noon. A blazing sun burns rippling waves of heat across the sandy earth making the distance appear almost fluid. Tumbleweeds bounce over the land past bare bones, bleached white, crisp, and brittle in the scorching sun. Flies buzz past. A small group of turkey vultures peck at coyote carrion. A dry wind blows any sense of well-being away, and even the air smells empty. This is the desert.

What Mary Austin called "a land of little rain" is an environment that often seems forbidding. We perceive these lands with words in mind such as harsh, barren, uninviting, and scarce. Yet in the desert that is Zion National Park, people have been living for thousands of years. The plant life in Zion, at first glance, may also seem harsh and minimalistic—certainly anything but lush. In digging deeper, however, we see that these plants, so symbolic of the desert, are a key part of what has made this place a home to humans for so long.

Along the Wildcat Canyon Trail, off the Kolob Terrace Road, stands of big sagebrush (*Artemisia tridentata*) cover the plateau, creating a sea of pale green. Rubbing the suede-textured leaves between my hands, I smell the vibrant fragrance that makes me know I am in the desert. This plant has been used extensively by Native Americans for treatments in both the physical and spiritual realms. They spread powder made from pounded leaves over rashes for relief. A tea made from the leaves was used as a strong antimicrobial and disinfectant wash. Bending down to examine the trunk of the sagebrush, I feel its papery bark and think of fire. Native people may have used the smoke of burning sagebrush as an antidote after an unfortunate encounter with a skunk. The strongly scented smoke not only cleansed humans of surface odors, it had the ability to cleanse the soul as well. Pungent smoke could be used to clear the air of bad spirits, or pestilence, as well as for purification in sweat lodge ceremonies. Heat, smoke, and scent. This vibrant plant shows me that the desert is potently alive.

The abundant medicinal and edible uses of the prickly pear cactus and datil yucca hide behind the plants' defensive spines and sharp tips. Photo by Sally Wier

Down in Zion Canyon it is late June. A few remaining blooms color the flowering tops of prickly pear cacti—fuchsia, salmon, pale yellow, and peach. Though seemingly a plant best to be avoided, the cactus offers many rich edible and medicinal rewards to people. As the summer progresses and these bright flowers wither and fade, the fleshy, sweet fruits of the cacti will develop and ripen. A seasonal staple in many Native American diets, the fruits have been made into jellies, candies, and syrups. Supporting pads of the cacti, though intimidating to the touch, are a rich resource as well. Once rid of their sharp spines, the pads can be soaked in water, split open, and then applied to the skin to soothe wounds and bruises, acting in much the same way as aloe vera. A plant that could leave your body punctured, sore, and swollen upon a rough first encounter surprisingly hides secrets of relief beneath its combative surface.

The desert is an incredible place of blooming, bursting, and thriving life. Rich secrets exist in the landscape.

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What's Blooming in Zion?

Rubber rabbitbrush (*Chrysothamnus nauseosus*-Aster Family) is a shrub that provides plentiful color on roadsides, trail sides, and open fields in the late summer and early fall. Look for its golden clusters—made up of masses of tiny, tubular flowers—on the Pa'rus Trail and at the Court of the Patriarchs.

Broom snakeweed (*Gutierrezia sarothrae*-Aster Family) is plentiful along the Kolob Terrace Road, where it brightens the scenery beneath the charred trees and shrubs of a recent wildfire. In places, it forms low, almost perfect mounds covered with tiny, bright yellow flowers.

Silverleaf nightshade (*Solanum elaeagnifolium*-Nightshade Family)—with its blue-purple flowers—provides a splash of contrast to yellow flowers and coppery cliffs. Short hairs on its lance-shaped, wavy leaves give the plant a silvery-gray color.

Remember, it is against park policy to pick flowers. Please heed signs that say, "Stick to the Trail," and give plants a chance.

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Thanks to our writers Barb Graves, Tim Lutterman, and Sally Wier

On August 1, 1929, the first issue of *Nature Notes* was published. Written and produced by the Education Departments at Zion and Bryce Canyon, its purpose was to provide information to "those interested in the educational opportunities, the natural history, the scientific features or the scenic beauties of this region." Eighty years later, *Nature Notes* continues this tradition by covering subjects pertinent to Zion National Park and its employees.

Bighorn Business

It's a sunny, sweltering day in Zion National Park. Rather than face the throng of visitors overrunning the canyon, I find myself traveling through the Zion-Mt. Carmel Tunnel to the relative solitude of the east side. My hiking partners and I have driven this particular stretch of road more than once, so instead of studying the intricate scenery of the slickrock terrain, we focus on finding something else—Zion's herds of desert bighorn sheep (*Ovis canadensis nelsoni*). Suddenly my friend calls from the backseat, "There! To the left!" Sure enough, high above the road moving nimbly across the waves of sandstone are the bighorn, going calmly about their business as car after car drives by, unaware of the presence of these masters of desert and rock.

Even though I have seen these animals many times, I still feel fortunate to see them here. Bighorn sheep disappeared from this park over 50 years ago and would have remained missing but for the hard work of nine different federal and state agencies who brought the bighorn back to their Zion home.

The desert bighorn sheep is a subspecies of the better-known Rocky Mountain bighorn and has many of the same characteristics. Horns (not antlers) and a robust build give them the look of their cousins, while specially designed hooves with "grippy", leathery soles for traction allow them to move gracefully over terrain that would make even the most experienced hikers balk. Unlike their cousins, desert bighorn have many adaptations that help them survive in the hot, dry environment of Zion. They are capable of surviving on the water contained in the food they eat or in temporary pools following a rain. They can often go for weeks or months without visiting permanent water sources. They can also survive large changes in their body temperature and a loss of up to 30% of their body weight.

Despite these abilities, the bighorn were unable to cope with the overwhelming pressure of Mormon settlers' livestock. Almost as soon as settlement began in Zion in 1863, the bighorn began to decline. Hunting was part of the problem, but the single biggest killer was disease. Just as measles and small pox devastated the Native American populations across the New World, diseases carried by domestic sheep—influenza and pneumonia—decimated the bighorn.

Even after Zion National Park was established in 1909, and livestock were removed from the park, the sheep continued to decline. Diseases could not be removed, and the last bighorn was seen on the Watchman in the summer of 1954. For almost 20 years they remained absent but not forgotten. In the '60s a plan to bring the bighorn back

In 1863, the bighorn began to decline almost as soon as settlement started in Zion.

was developed and finally put into action in the summer of 1973. That year, 12 bighorn were captured from nearby Lake Mead National Recreation Area and placed into an 80-acre enclosure in Zion Canyon.

Over the next several years they suffered from disease, accidents, and battle wounds (the boys love to fight over the girls), but the population grew until there were enough for a release in 1977. This release in Parunuweap Canyon ultimately failed, but the next year the entire herd of 20 was successfully released into Zion Canyon.

An in-depth population survey hasn't been conducted since 1996, but during the winter of 2008 biologists from the Utah Division of Wildlife flew over the park and counted 75

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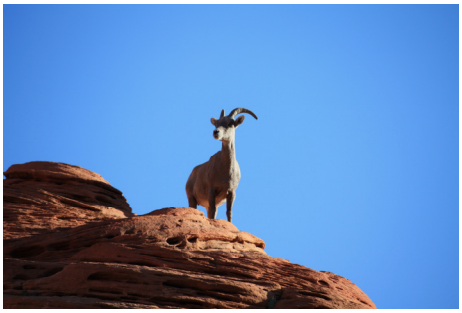

Bighorn can often be seen on high outcroppings of rock overlooking State Route 9 on the east side of Zion. Photo by Tim Lutterman

Dinosaurs in the Attic

Back in 1981, on a hike up sun-baked Coalpits Wash, I examined a rock about a meter in diameter, jumbled in a talus of smaller red boulders. My heart rate bumped up a notch at what I found: pressed in the rock's sandstone matrix was a clear imprint, a track the size of a pot pie with three toes. Who, I wondered, was the animal responsible for what I was seeing? Was the track evidence of a long-extinct bird? I'd heard about Zion's dinosaur tracks, but this seemed avian, as if an ancient seagull had slapped a giant webbed foot against the stone. The track sent me on an imaginary journey to the Jurassic era. I snapped a picture and headed down the drainage as visions of dinosaurs danced in my head.

My Coalpits track photo rests among the other dinosaurs in my attic, boxed with summer camp letters from long ago friends and pictures of grandfather piloting a biplane in the 1930s. Time changes things, but time occasionally tosses us a clue to the past. This season, time is tossing clues. Via the Internet, I've found long-lost friends, and numbers from grandpa's photo led to discovery of a

A *Grallator* track from a three-toed dinosaur from the Kayenta formation. NPS Photo #15801B

fully restored, still-in-service biplane in California. But my favorite discovery is the source of Zion's Coalpits track from long ago. I've put my bird-brained ideas aside after discovering the track I observed over a quarter of a century ago was made by a theropod (three-toed) dinosaur that trudged Zion's mud over 220 million years ago.

The imprint was likely a *Grallator* track, the ichnogenera ("track genera") name given to the footprint type. Tracks are named separately from the dinosaurs that created them because there is no way to clearly link the two. *Grallator* tracks are often attributed to *Megapnosaurus*, a bipedal carnivore that appears to have characteristics of both birds and reptiles. I can picture *Megapnosaurus* trotting across the Moenave river plain searching for prey under a hot equatorial sun. One of the creature's sun-dried tracks was later buried in soft sand that slowly turned to stone until erosion again revealed the original print. Living *Megapnosaurus* is long gone, but the recent comeback of the nearly extinct California condor soaring above Zion's crisp sky, under the faraway streak of a passing jet, reminds me that mystery and discovery greet us on both sides of every moment.

-Barb Graves

Source: Utah Geological Survey

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individual sheep and estimated that there could be as many as 188 currently residing in the park.

This is a year of centennial celebration in Zion, but in many ways it is also the year of the bighorn. This August, the Zion Natural History Association began an "Adopt-a-Bighorn" program. For just $30 you can name your own bighorn and get a stuffed animal sheep as a remembrance. Money raised by this program will be used by the park to fund additional bighorn research which will help confirm what many of us already know. Bighorn aren't just surviving in Zion; they're back in business.

-Tim Lutterman

It is a wholesome and necessary thing for us to turn again to the earth and in the contemplation of her beauties to know of wonder and humility.
Rachel Carson

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Another spiny desert dweller catches my eye out on the canyon trails. A plant of abundance and luxury, the yucca was perhaps the single most useful plant to early people in Zion Canyon. One of the three key species found in Zion, the datil or broadleaf yucca (*Yucca baccata*), has useful roots which contain high volumes of saponins. Modern science has validated that these steroid saponins are medicinally useful and a precursor to cortisone, which accounts for yucca's effectiveness in home remedies for arthritic pain and joint inflammations. Offering a wide variety of food supplies as well, the seedy yet nutritious fruits, when ripe in autumn, can be eaten raw, made into soup, roasted, dried, or even ground into mealy flour. Additionally, the fruits have been cooked in pies as a substitute for apples. The seeds, seed pods, and flowers also served as an abundant food source in Zion Canyon.

The desert may seem to be a barren, sparse land we have come to think of in negative, harsh, and deathly terms. It is, nevertheless,

Datil yucca's sinuous fibers. Photo by Sally Wier

an incredible place of blooming, bursting, and thriving life. The resourceful inhabitants of Zion Canyon discovered the rich secrets of this landscape and its abundant offerings by simply taking the time to look more closely at what surrounded them.

Finding life-sustaining foods and medicines in unwelcome packaging enabled these people to flourish in an arid world. As I hike through Zion Canyon today, I pause a moment in the heat and look around me. In the sun burnt colors of canyon country, I no longer see scarcity and harshness. I see a vibrant terrain worthy of exploring deeply—one worth calling home.

-Sally Wier