



CANYON OVERLOOK

Z I O N N A T I O N A L P A R K

TRAIL GUIDE

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The Overlook...

7

Walk a short distance until you come to a wide, flat expanse of slickrock...



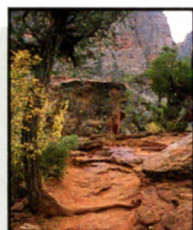
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Continue on a short distance to where the trail turns sandy...



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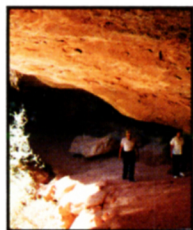
The trail passes a V-like cut in the rock and then makes a sharp bend to the right...



4

Climb up a small switchback, you will reach a large block of sandstone along the left side of the trail...

3



Continue on until you reach the cave-like overhang...

You will now walk into a small side canyon shaded by an overhang...



2



Climb the stone steps to where you can first see the tunnel entrance...

1

Hwy. 9

Parking Lot

CANYON OVERLOOK TRAIL GUIDE

Round trip 1.6 kilometers (1 mile) - Allow ONE HOUR

On this trail you will walk through a pinyon-juniper plant community to a beautiful overlook of Pine Creek and lower Zion Canyon. This booklet will introduce you to the common plants and animals of this area and discuss how they are uniquely adapted to the hot, dry conditions characteristic of this environment. It will also point out geological features of particular interest.

In this ecosystem, all living and nonliving elements are related to one another, directly or indirectly, and depend upon one another for their survival and well-being. Some of these interrelationships will become apparent to you as you explore the trail using the booklet as a guide.

There are no numbers to follow. Instead, you will be led to a variety of stops that highlight features of natural history and geology. The map, sketches, and photographs will help you to identify these places. *Please watch your step as you walk*, there are some

severe dropoffs adjacent to the trail, and trail surfaces are uneven and can be slippery. Also, we encourage you to stay on the maintained trail to minimize impacts to the delicate desert vegetation.

First Stop

Climb the stone steps to where you can first see the tunnel entrance. Beside you is a lone pine called the SINGLELEAF PINYON. The pinyon is the common pine seen on the dry, rocky slopes of Zion. There are two varieties and both are commonly associated with juniper. Together they form the Pinyon-Juniper Woodland which covers much of the arid Southwest. It is Zion's most common habitat and it is the one you will encounter on this trail. Can you name some of the characteristics of this environment?



The cones of this tree produce a tender, sweet, and highly nutritious nut that was a dietary staple of the Paiute, the native people of Southern Utah. Pine nuts are still enjoyed today throughout the Southwest as well as in Mexico.

Beside the trail are two other plants typical to the Pinyon-Juniper Woodland - SHRUB LIVE OAK and UTAH SERVICEBERRY. The holly-like leaves of the shrub live oak make it easy to identify, but the fact that it is an oak may surprise you. Its small and leathery leaves are well-adapted to this arid environment. In summer and fall look for small acorns, a food source for deer, squirrels, and other wildlife.

The serviceberry is a shrub with small, rounded, pale-green leaves with serrated tips. The slender, sturdy branches had a useful function in former times. The Paiutes shaped them into arrow shafts, first by steaming the branches, then by pulling them back and forth through a hole drilled in the webbed section of an elk or deer antler. The small white flowers of serviceberry bloom in April and May.

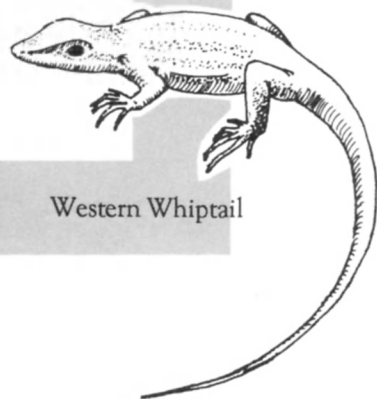
As you move along the trail, be alert for lizards. Lizards are ectotherms (as cold-blooded animals are known) and can allow their body temperatures to fluctuate as the environmental temperature does. The temperature in this environment may seem uniform, but there actually exists many sharply defined microclimates, caused by local differences in sun exposure and precipitation. Lizards spend a great deal of time utilizing these different zones. One way they contend with intolerable temperatures is to seek shade either in vegetation or leaf litter, or under rocks. Another strategy is to move back and forth on the surface of rocks of varying color and locations. Rock temperatures may vary as much as 17° C (30° F) dependent on color and exposure to sun. So, if you see a lizard scurrying about from one patch of shade to another, it may be in an attempt to regulate its body temperature.



Shrublive Oak



Utah Serviceberry



Western Whiptail

On occasion you may notice a lizard with a missing or severed tail. Lizard tails are sometimes detached in confrontations with predators. This feature has saved the life of many a lizard, leaving predators with nothing but a wriggling tail. Most species are then capable of growing a new one.

Two lizards commonly seen in Zion are the PLATEAU and WESTERN WHIPTAILS. They are streamlined lizards with tails about twice the length of their body. They are among the fastest moving lizards in Zion. When running, they whip their tail back and forth for balance.

If you encounter a lizard, or any other wild animal in a national park, please remember that it is their home and they are protected.

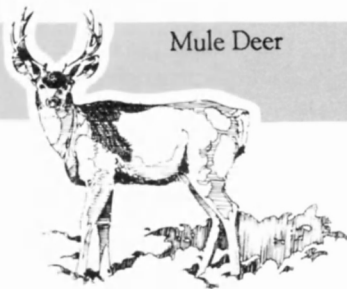
Second Stop

You will now walk into a small side canyon shaded by an overhang. At the sharp bend in the trail you will see a broad-leaved deciduous tree leaning over to reach sunlight. This plant, the BOXELDER (Maple family), is normally found along streams in the canyon bottoms where it has plenty of water and sunlight. Here, because of water from springs, it is able to survive.



This rock-strewn overhang provides a suitable habitat for one of Zion's nocturnal creatures, the RINGTAIL CAT. The ringtail, closely related to the raccoon, has a long black and white banded tail, a weasel-like body, and large eyes and ears. The ringtail emerges at night to feed on small rodents, insects, birds, and fruits, the main ingredients of its omnivorous diet. Ringtails, like many other mammals in Zion, are active either at night, dawn or dusk to avoid the extreme summer daytime temperatures. When temperatures are hot, many animals conceal themselves under rocks or vegetation, or in burrows. Since you are probably walking during daylight hours, you may not see many mammals, but you might see the signs they leave all around us—tracks, bits of fur, droppings, and impacts on vegetation. At this very moment a MULE DEER may be watching you from its patch of shade beneath a bush!

Mule Deer

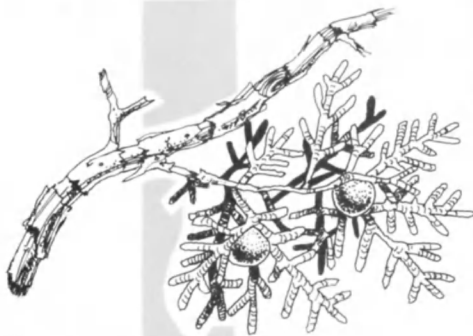


This is a good place to listen for the CAN-YON WREN'S silvery whistle, with its clear descending series of notes. Canyon wrens, as their name implies, are common inhabitants on the slopes of rocky canyons. Small birds with long slender bills, white breasts, and rich red-brown bellies, they are often seen dodging in and out of rocky crevices, in search of insects and spiders.

As you continue up the trail look to the left for a large evergreen tree with shaggy bark, scale-like leaves, and a thick twisted trunk. It is a UTAH JUNIPER (Cypress family). This tree thrives in drought-ridden places between 900-2,450 meters (3,000 and 8,000 feet) and is the dominant tree in the desert ranges of Nevada and Utah. Look for its frosted-gray, berry-like cones. The cone's fleshy scales have fused together to form a hard coating around the seeds. These cones are devoured by birds, rodents, and coyotes, whose digestive juices act as softening agents. When excreted, the softened seeds are dispersed into new habitats, and new trees become established. This is an example of a symbiotic relationship. Symbiosis is an association between two dissimilar organisms. In this case the tree provides the animals with a food source, and the animals initiate the establishment of new trees.

Junipers provide food and shelter for many types of animals. Examine the bark for holes drilled by the SAPSUCKER. These holes allow sap to flow from the tree, attracting and adhering insects. The sapsucker later returns to feast on both sap and insects.

Also notice the peculiar bud-like growths called "galls" on the foliage. Galls are produced by insects that inject both an egg and a growth hormone into a portion of a plant. The growth hormone stimulates the growth of the plant tissues, which form a protective casing around the developing insect. The larvae feed on these tissues within the gall. When mature, the insect chews a tiny hole in the gall and flies away.



Utah Juniper



A little farther up the trail and to your left is a small leaning pinyon pine, which has been gnawed in places by PORCUPINE. Trees like the pinyon provide porcupines with an important food source during fall and winter—inner bark. To feed, a porcupine will sit in a tree and chip or pull off the loose outer bark. When the soft inner bark is exposed, it will begin to eat. After eating, it may sprawl out on a limb with all legs dangling, and rest. During spring and summer when plants are in leaf, porcupines feed on many grasses and wildflowers, and on the foliage of a variety of shrubs.

Continue to a point where the trail abruptly turns right and a railing begins. From here you have a bird's eye view of the Pine Creek Narrows. Pine Creek is an intermittent tributary of the Virgin River. During floods it carries sediments and rocks which grind and cut the Navajo Sandstone. Rapid downcutting in resistant rock may create a slot canyon like this.



Third Stop

Continue on until you reach the cave-like overhang. Notice that along its base is a springline. Some of the moisture which falls on the surface of the plateau percolates through the very porous Navajo Sandstone. The water eventually encounters an impermeable layer of shale forcing it to move laterally along the shale's surface. When this water reaches an outlet, it seeps out from the rock forming a springline or seep.

A seep is visible here along the bottom edge of the alcove. Water seeping out here for centuries has caused the sandstone above and below to disintegrate. Erosion has been gradual and as a result a gently sloping overhang has been created.

Along the base of the alcove is the MAIDENHAIR FERN, with its silky black stems. Please remember that like the wildlife, the plants in Zion are protected. They are to be admired, but left for the next visitor to enjoy.

The seepline can be traced along the right side of the trail for the next 92 meters (100 yards). As you walk along, notice the lush wealth of vegetation along the seep. During the spring and early summer small, inconspicuous orchids bloom in these "hanging gardens"-GIANT HELLEBORINES.

Fourth Stop

After a few minutes climb up a small switch-back, you will reach a large block of sandstone along the left side of the trail. From a distance the rocks in Zion might appear lifeless, but closer examination reveals some very colorful and interesting plant communities. Look at the orange, red, and grayish-green plant material called LICHEN adhering to the rock surface. Although they appear to be a single plant, lichens are actually a symbiotic association between millions of microscopic algal cells enmeshed within a framework of fungal filaments.

Over 20,000, lichen species are known and grow in almost every environment on earth. They are useful to animals, both domestic and wild, and also to humans. Lichens are eaten by snails, mites, and many other invertebrates. Reindeer and caribou in the

subarctic forests graze on them. People have used lichens as a food source in times of emergency, and during the 1300-1800's Europeans used them extensively in the production of dyes. In ancient China and Europe lichens have been used medicinally to inhibit bacterial growth.

Today lichens are used as air quality indicators because they are sensitive to oxides of nitrogen and sulfur. Scientists have found that the number of lichens decrease the closer one gets to pollution centers, leaving almost none to be found in cities.

Zion, on the other hand, has favorable air quality and plenty of lichens. This area, like many other national parks, receives the highest protection afforded by the Clean Air Act. The quality of air (and water), however, within the park is greatly affected by activities in the surrounding area. More than islands of inspiring landscape, national parks are integral parts of greater ecosystems. Their integrity and continued preservation is in large part dependent on activities in the world around them.



Fifth Stop

Continue on a short distance to where the trail turns sandy. Some small rocks mark the left edge of the trail. Growing about knee-high is MANZANITA, a shrub with bright evergreen leaves and dark red, twisting branches. The name manzanita is Spanish for "little apple", which aptly describes the appearance of the fruit borne in spring. The ripened fruit was consumed either fresh, dried and ground into pinole, or cooked as mush by the native peoples of the Southwest. The unripened fruit makes an amber-red jelly.

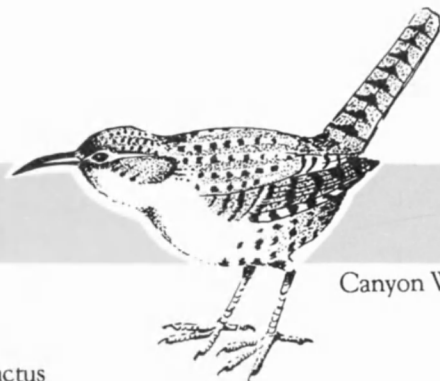


Notice the unusual orientation of the manzanita leaves—they stand upright and at edge to the sun—an adaptation which minimizes moisture loss.

PRICKLY-PEAR CACTUS is growing near the manzanita. This variety, known as BEAVERTAIL PRICKLY-PEAR has low prostrate stems or pads that creep chain-like over the sandy soil. All varieties of prickly-pear are known for their large vividly-colored flowers which bloom in May and June. Small, wine-colored fruits ripen along the edges of the pads in fall. Although ominous



Prickly-Pear Cactus



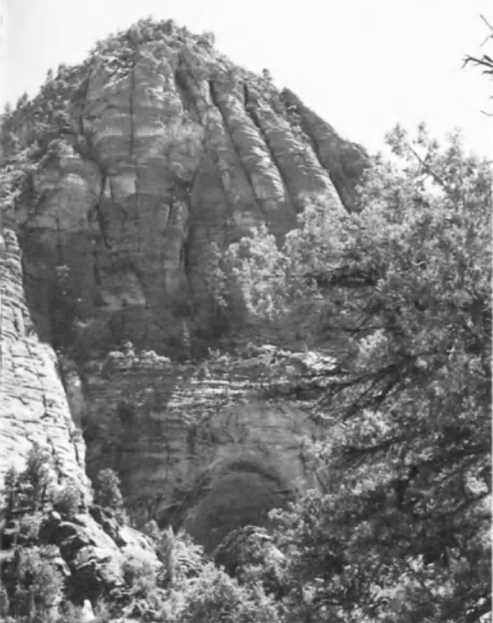
Canyon Wren



In Mexico, the pads or “nopales” are enjoyed in many dishes. The fruits can be consumed fresh (but watch out for the spines!) or processed into a sweet tasting juice or jelly. They were used widely by early settlers and Native Americans of the Southwest.

There are several other varieties of prickly-pear growing in Zion. One is the ENGLEMANN PRICKLY-PEAR, an erect plant up to 1.5 meters (5 feet) tall, with large flat pads and long spines. See if you can spot this species on the trail.

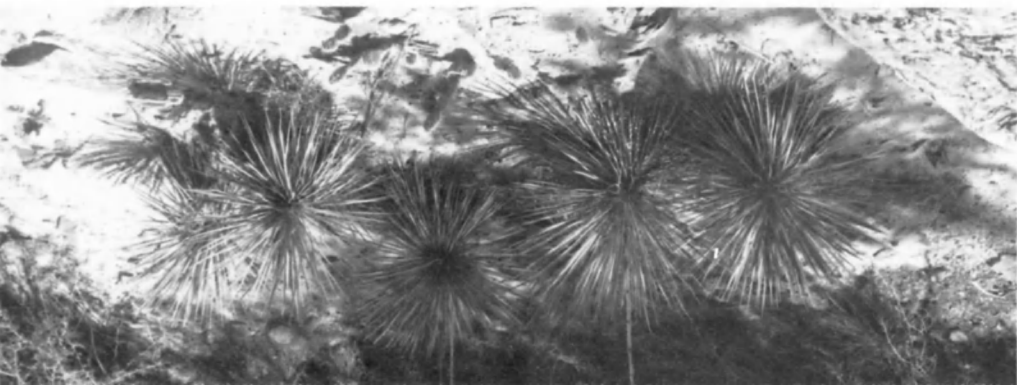
Now, walk a bit further until you pass a leaning pinyon pine on the left. Do you see a shrub that might be called SILVER BUSH? Its leaves are very thick and have a silvery sheen that reflects sunlight, adaptations for surviving in a hot arid climate. The undersides have woolly scales designed to reduce the evaporation of water. The plants here are small, but in favorable locations they can reach a height of 2 meters (6 feet). This shrub is also known as buffaloberry, because the berries of a similar species were once used to make a sauce to flavor buffalo steaks.



One thing we hope you do not see along this trail is litter. In addition to being unsightly, it is damaging to wildlife. You can help keep your park clean by discarding any litter you see in parking lot receptacles, and by encouraging others to do the same.

Sixth Stop

Continue walking on the slickrock. The trail passes a V-like cut in the rock and then makes a sharp bend to the right. Just before the bend, look down to your right at the small patch of NARROWLEAF YUCCA. The yucca is a member of the Agave family and is well adapted to life in a semi-arid climate. Its rosettes of stiff, sharply-pointed, grooved leaves radiate from a central axis and act as a catch-basin, channeling water to the roots of the plant.



There are two species of yucca in Zion, the narrowleaf and the BROADLEAF, which can be distinguished as their names indicate. During the spring yucca sends up a flower stalk from which bell-shaped, creamy white flowers are borne. These flowers are the stage for an unusual plant-animal interaction. Pronuba moths, tiny white winged creatures, visit the plants during the evening and lay their eggs in the ovary of the flower. The female moth fertilizes the plant by packing the stigma with a mass of pollen gathered from other flowers. Within a few days the fruits begin to form, and the eggs are safe within them. When the eggs hatch the fruit not only provides protection, but an inexhaustible food supply—seeds. When the larva has matured it will chew its way out of the ovary and fall to the ground where it will pupate.

This is another example of a symbiotic relationship. This one is specifically called “mutualism”—an obligatory relationship where both organisms benefit each other, and depend on each other for growth and survival. In this example the insect has a safe place in which to develop, and the plant in turn is pollinated.

The closer we look at the organisms in an ecosystem, the more we learn how intricately entwined they are. Sometimes the removal of even a small link can cause a major imbalance.

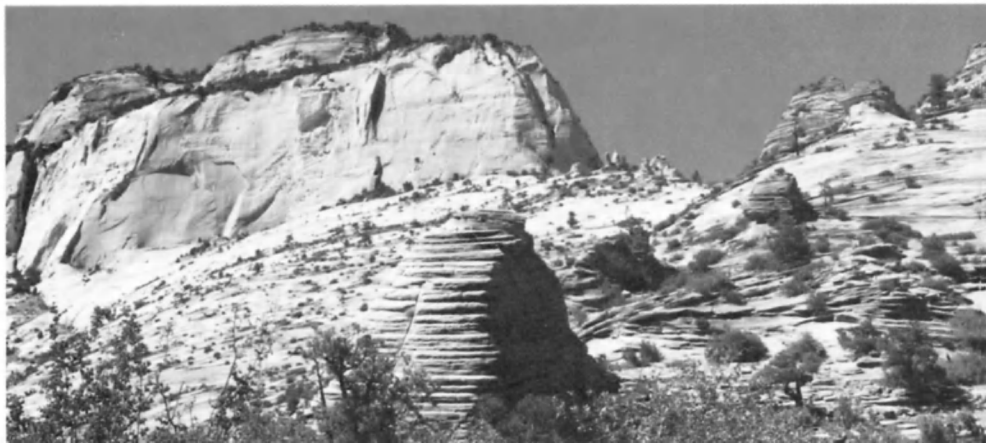
Seventh Stop

Walk a short distance until you come to a wide, flat expanse of slickrock. Look at the wall on the opposite side of the canyon. You'll notice a variety of stains on the rock surface. Some of the colors are due to minerals within the rock, while others are from sources deposited on the outside. Navajo Sandstone is mainly composed of quartz sand grains cemented together with calcium carbonate, silica, and an iron oxide called hematite. The iron oxide gives the sandstone its red color. The upper portions of some of Zion's peaks, however, are white. One theory states that some of the iron oxide was leached out of the upper Navajo by flowing groundwater, causing the rock to revert to its original white color.

Another characteristic rock stain is black. Where streaks of dull black coat the rock, decaying plant material has washed down the cliffs and stained them with carbon.

Where the black coating appears glossy, is a stain known as "desert varnish". This "varnish" is 70% clay. Manganese and iron oxides form the remaining 30%. This coating collects from outside sources. Clay particles carried by the wind adhere to the rock, forming a film. Water moves through this film, carrying traces of manganese and iron. These are deposited when the water evaporates. The iron cements the clay particles together.

Now look up at the slickrock on your right. Notice the short pillars of sandstone called "hoodoos". These are the result of an unusual weathering pattern. The sandstone has eroded away from under water-resistant, iron-containing caps, leaving behind strange columns of rock.



The Overlook

The valley before you is enclosed by sheer cliffs of Navajo Sandstone. These cliffs originated as dunes of migrating sands. Their source was from eroding highlands to the west in what is now central Nevada. Migration of the dunes and shifting winds produced the diagonal lines called "cross-beds" visible in the cliffs to the right. About 150 million years ago a shallow sea covered the area and deposited a top layer of limestone called the Carmel. This layer is visible on the cap of the West Temple, the highest peak directly opposite you.

The next stage in geologic history is uplift and erosion. Beginning about 13 million years ago, all of Southern Utah underwent intermittent uplift. This uplift steepened the slopes of streams and caused them to downcut into the uplifting land, creating canyons. The running water transports rocks and sediments downstream which abrades the channels and deepens the canyons.

Mass-wasting in the form of rockfalls and slides is gradually widening these canyons. The cliffs of sandstone are sometimes undermined by the softer layers of shale (the slope-





Fremont Cottonwood



Velvet Ash

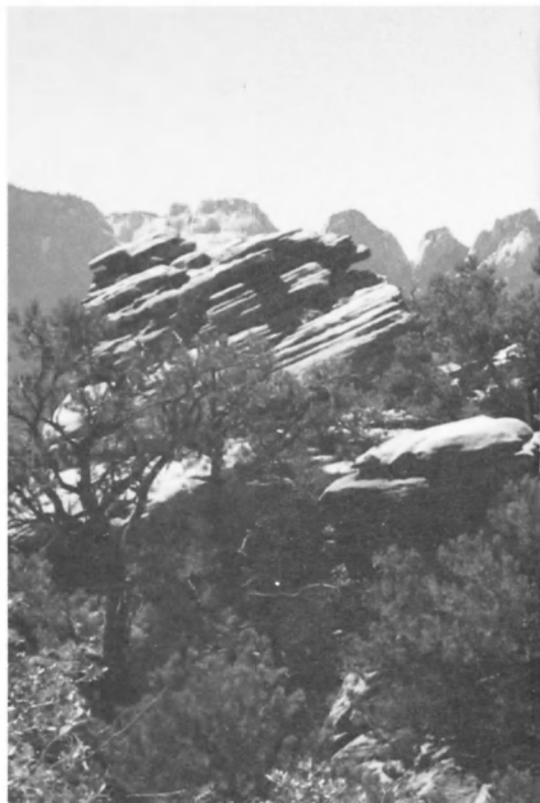
forming layer beneath the Navajo) and break off in large blocks.

Zion Canyon, visible at the lower end of this valley is still being cut by the Virgin River. In fact, it can continue to cut an estimated 300 meters (1,000 feet) down and still have enough gradient to transport its sediment to the Colorado River.

From this overlook you get your first glimpse of Riparian Zone vegetation. Notice how dramatically the vegetation changes from the talus slopes to the creek banks. The slope is dominated by pinyon and juniper, while water-loving deciduous trees like FREMONT COTTONWOOD, boxelder, and VELVET ASH line the creek.

We hope you have enjoyed this discovery walk. As you walk back think of the park as an outdoor museum. Every plant and wildlife community is an exhibit within it. Everything in the environment is intricately interdependent on each other for survival. The oxygen you now breathe was processed by plants, and your exhaled carbon dioxide becomes a part of the plants' life cycle. Realizing that we are dependent upon the natural world for our very existence, it is no

wonder that most people enjoy and want to protect it. National parks have been set aside in over 100 countries around the world to preserve a variety of unique and inspiring lands. They are all a part of this amazing outdoor museum—the Earth.



Other majestic walks

An interesting self-guiding trail begins at the Weeping Rock parking area 8 kilometers (5 miles) up canyon from the Zion Canyon Visitor Center. Allow 30 minutes for this .8 kilometer (1/2 mile) round trip walk to a dripping water seep.

Another trail, called the Gateway to the Narrows, begins at the end of the Zion Canyon Scenic Drive at the Temple of Sinawava. Allow 2 hours for this 3.2 kilometer (2 mile) round trip walk along the Virgin River.

Here is a list of some of the flowering plants found along this trail. Most bloom during spring and summer.

Zion milkvetch	Western wallflower
Silverleafed milkvetch	Deerclover
Rockcress	Giant helleborine orchid
Paintbrush	Senecio
Dandelion	Palmer penstemon
Miners lettuce	Eaton penstemon
Desert phlox	Evening primrose
Mountain lover	Hummingbird trumpet
Sand buttercup	

Recommended Reading

"Hiking in Zion National Park - The Trails"

*"Exploring the Backcountry
of Zion National Park: 'Off-Trail Routes' "*

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