

Slot Canyons Of The Southwest

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By Ben Hattenbach*

Sprinkled across the Colorado Plateau in the southwestern United States are a series of deep, narrow canyons carved over millions of years into the desert floor. Flash floods running through many of these “slot” canyons have eroded paths just a few feet wide, yet hundreds of feet deep, through the dark red sandstone of the region. Layers of sedimentation have been sculpted into labyrinths filled with colorful, twisting cathedrals. Under just the right conditions, reflected sunlight causes the walls of these canyons to glow with intense shades of red, pink, orange and yellow. These otherworldly scenes are occasionally complimented by narrow beams of light slicing through the darkness, drawing in photographers from around the world.



Five Shades Of Red (Lower Antelope Canyon)
Hasselblad H3D-39 with HC50-110 at 110mm

The extraordinary beauty of these canyons may lead casual observers to conclude that even a monkey armed with a camera could emerge with publishable photographs. The reality is quite different. Successful slot canyon photography requires planning and an appreciation of details that distinguish this form of artistry from landscape work in other venues. Below are some suggestions that will improve your odds the next time you encounter a slot canyon.

When To Go

As with other types of landscape photography, there is no substitute for good light when it comes to slot canyons. Most landscape photographers are preconditioned to expect optimal lighting around the “golden hours,” the times right around sunrise and sunset. Happily, it is unnecessary to rise at the crack of dawn to capture the best light inside of slot canyons. The more photogenic canyons tend to be deep and narrow, meaning that the sun must be overhead before appreciable amounts of light begin to illuminate their walls. The best time for most slot canyon photography is therefore midday, between about 10:00 a.m. and 2:00 p.m. Also, contrary to elementary principles of general landscape photography, clear blue skies are ideal for work in slot canyons. Radiant colors simply will not develop under diffuse lighting, such as in cloudy or overcast weather.

Conditions inside the slot canyons also vary considerably over the course of each year. The light beams that descend into Upper Antelope Canyon, for instance, are only present during the middle of each year when the sun’s path takes it directly overhead and, unfortunately, when crowds are at their peak (more specifically, beams begin to appear around March 15 and vanish around October 7). Lower Antelope Canyon, in contrast, has a different orientation and remains nicely photographable even during the winter.



The Cathedral (Upper Antelope Canyon)
Hasselblad H3D-39 with HCD 28mm lens

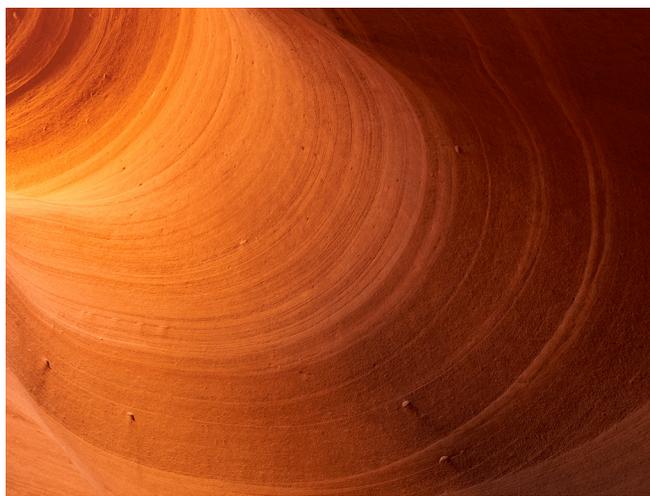
Widely varying thermal conditions also come into play. Winter temperatures in the Arizona and Utah deserts regularly drop below freezing, while in summer they can exceed 100 °F (38 °C). To

complicate matters further, summer monsoons make August and September two of the more dangerous months to explore these canyons. You certainly do not want to experience firsthand the power of the flash floods that continue to sculpt these areas. In 1997, eleven tourists were killed by a flash flood in Lower Antelope Canyon, and as recently as 2006 a flood required that canyon to remain closed for five months. On balance, the best months to visit the slot canyons of the southwest are usually April and May.

Search For Reflected Light

Now that you know when to arrive, it is essential to be able to identify the type of light that produces the best photographs. You should studiously avoid including any visible sky in your frame, as the contrast with the dark canyon interior will exceed what your camera can capture. Unless you resort to multi-exposure high dynamic range (HDR) techniques, including sky will cause portions of your image to be blown out or other darker areas to be materially underexposed. For similar reasons, you will usually want to avoid any surfaces, such as canyon walls, that are bathed in direct sunlight. And, although deep slot canyons can be nearly dark even at mid-day, refrain from using a flash and avoid other photographers using flashes, as that will wash the color out of your image.

The light you want is light that has been reflected off of the red canyon walls above. Look for areas where sunlight is directly striking a wall, and then shift your attention to the opposite side of the canyon in search of glowing orange and red areas to photograph. The areas illuminated by this reflected light will be the most colorful and will have manageable contrast together with smoother transitions. With the right light, color filters and saturation adjustments in post-processing are simply not necessary to achieve brilliant coloration. No color alterations whatsoever were made to any of the images accompanying this article.



Sandstone Striations (Water Holes Canyon)
Hasselblad H3D-39 with HC50-110 at 110mm

Keep in mind that only a small change in the sun's position can dramatically alter the areas of direct and indirect illumination. Even with the passage of just a few minutes the photographable scenery within a slot canyon can undergo marked transformations. Often it is well worth taking multiple trips up and down the same canyon as the location and intensity of lighting varies through the peak hours for photography.

Avoid Flare

Anyone who has included the sun in a photograph is undoubtedly acquainted with the concept of flare. Lens flare results from light scattered inside a lens and often appears as a series of polygonal shapes with geometries that depend on the shape of the lens diaphragm. Even if, as recommended above, you endeavor to exclude any sky from the frame, that will not always prevent flare while photographing in slot canyons. Although particularly bright areas may not be included in your field of view, when a bright light is nevertheless impinging on your lens elements it can cause "veiling flare" that appears as a haze, reducing contrast and washing out your image. Veiling flare is particularly prevalent in slot canyons, where your subject matter is often more than a dozen stops darker than any areas under direct illumination.

Using lenses and filters that are well-cleaned and have antireflective coating helps, but this is not a complete solution to the problem. Using a lens hood is also a step in the right direction but, unless you are shooting with a prime lens, the hood will not always preclude veiling flare. This is because the hood will be designed to accommodate the widest field of view allowed by your lens, and light sources outside the frame can still impinge directly on the optical elements of your lens when you have zoomed in beyond the minimum focal length. If you are using a zoom lens with a hood, you can avoid veiling flare by first zooming out to the widest angle offered by the lens and ensuring that no sky is visible in the field of view, only thereafter zooming in to the desired scene. If you find that bright light is directly striking your lens, consider whether a slight change in position could solve the problem. Slot canyons often include overhanging ledges that can be used to shield your lens from direct lighting. Alternatively, try using your hand, a hat, or some other object to block the offending light during your metering and exposure.

Proper Exposure

The light meters in most cameras are calibrated to produce a luminance value that is roughly equivalent to the reflectance of 12% to 18% gray. In other words, whether you are photographing the whitest snow or the darkest night, your camera will normally attempt to produce an image that is about as bright as light gray. Because slot canyons are normally quite dark, you will probably want to adjust your exposure downwards by around a stop, plus or minus half a stop, so that your capture accurately reflects the scene. Including some darker regions in your frame can frequently add to your image by offsetting and accentuating the highlights.



Flames (Lower Antelope Canyon)
Hasselblad H3D-39 with HC50-110 at 50mm

Also be mindful that even a properly framed shot of a slot canyon can require considerable dynamic range, so exposing to avoid blown highlights is particularly important. The exact amount by which you should dial down your exposure will depend on the circumstances of each shot and your personal preferences. Try experimenting with different levels of exposure, and use your histogram to settle on what works best in each situation.

Dynamic Imagery

There is more to a slot canyon than its motionless rock walls. Beams of light sometimes breach the darkness of canyons, making for some of the most interesting imagery. To enhance the visual prominence of such beams, one can toss handfuls of sand from the canyon floor immediately before starting an exposure. The resulting dust will reflect portions of the light, causing the beams to show up more brightly in your photograph.

Similarly, there are often bowls naturally carved into the canyon walls. Those bowls can be overfilled with sand shortly before (or even during) a long exposure. As the sand flows out of the bowl, it will create the appearance of a waterfall made out of sand.



Sandfall (Upper Antelope Canyon)
Hasselblad H3D-39 with HC50-110 at 75mm

Remain vigilant of other physical elements that reflect the living nature of the canyons. Often large trees or logs will have been wedged high above by a flash flood. Smooth sandstone surfaces are sometimes interrupted by barnacle-like protrusions made from other forms of rock that erode at different rates. Tumbleweeds will often blow into the canyons, providing contrasting colors and textures. Compose more interesting photographs by using these elements to your advantage.

Essential Equipment

Anyone seriously interested in slot canyon photography will require a tripod and cable release. Exposure times in the best slot canyons are often thirty seconds or longer because of the limited light coupled with smaller apertures for increased depth of field and low ISO settings for maximum image quality. A polarizing filter, which will increase the length of your exposure even further, is also an absolute necessity. Proper use of a polarizer will minimize undesired reflections while allowing the intense colors of the canyons to shine through, yielding dramatically superior results.



Triple Spotlight (Upper Antelope Canyon)
Hasselblad H3D-39 with HCD 28mm lens

Depending on your sensitivity to dust you should also consider wrapping your camera in some type of plastic. On windy days sand will rain into the canyons from the desert above. Similarly, when photographers are throwing sand to accentuate light beams, a fine dust will quickly accumulate on your equipment. Under these conditions I simply tape some standard plastic wrap (like Saran Wrap) around my camera and lens barrel, without covering the business end of the lens. You certainly should not plan on changing lenses under these conditions, unless of course you have an affinity for dust bunnies on your sensor.

Locations

Two of the most photogenic canyons, which are also among the easiest to access, are Upper and Lower Antelope Canyons just outside Page, Arizona. Both are located on Navajo land and currently require access fees of \$26. These are also two of the most visited and photographed sites. If you are interested in going off the beaten path, there are several other options in the vicinity that are worth exploring.

Water Holes Canyon is also near Page, only a short hike from Highway 89. It is on Navajo land and requires a Navajo hiking permit (\$5) for entry. The permit can be obtained during business hours from the Navajo Parks and Recreation Department, one branch of which is located next to the LeChee Chapter House, 3 miles south of Page on Coppermine Road (Navajo Route 20). That office is hidden in a trailer behind the well-marked Boys and Girls Club building.



Water Hole (Water Holes Canyon)
Hasselblad H3D-39 with HC50-110 at 75mm

Paria Canyon is another area well worth exploring. To access the “Buckskin Gulch” section of this canyon, park at the Wire Pass trailhead located south of Highway 89 along House Rock Valley Road. This is the same trailhead used to visit “The Wave,” except that visitors to the canyon can purchase a \$6 hiking permit on the spot from a self-service station in the parking area. From the parking lot simply cross the road, walk about 200 feet to the Paria riverbed, turn left, and follow the riverbed. About two miles later the slots begin. There are some challenging obstacles such as large boulders wedged in the canyon and knee-deep pools in the first few miles, followed later by some deeper pools. There can be considerable snow and ice here in the winter, which is excellent for photography but is also treacherously slippery. In summer there are many pools of cracked mud that provide interesting textures contrasting with the smooth curves of the canyon walls.

A variety of other “private” Navajo canyons can be explored only if accompanied by a Navajo guide. One such location, “Rattlesnake Canyon,” is located near Upper Antelope Canyon but is far shorter, shallower and less colorful than either Antelope area. Others include “Mountain Sheep Canyon,” “First Canyon,” and the mysteriously named “Canyon X.” Those venturing further from Page may wish to visit “Egypt,” “Spooky,” “Peek-a-boo” and “Zebra” canyons in the Grand Staircase-Escalante National Monument, or “Red Cave” in Zion National Park. There are scores of additional slot canyons accessible by four wheel drive vehicles and long hikes, many of which can only be navigated by those with advanced canyoneering skills and equipment.

Wherever you end up, enjoy your experience but please treat these natural wonders with care so that their beauty can be shared with future generations.

* When not photographing wild landscapes, Ben Hattenbach is a partner at a Los Angeles-based law firm where his practice focuses on the trial of complex intellectual property disputes. More of his images of the southwest, and other regions, can be seen at <http://www.benhattenbach.com>.