The Most Hike, Marla Perkins, Ph.D., October 2015

Fall was happening on the north rim of the Grand Canyon in early October when I started to hike from the north rim to the south rim, a distance of twenty-one miles or so. I had set the alarm for 4:37 a.m. (I always set the alarm with prime-numbered minutes) in order to travel the thirty miles from my campsite to the rim and to have breakfast on the way. Breakfast for a long day-hike includes an envelope of tuna in sunflower oil and half of a quart-sized zipper bag of trail mix: walnuts and dried pears. I dressed and ate and drove in the dark, and there was just enough light as I entered the national park to be able to see the yellow aspen leaves standing out from the dark greens of the spruce and fir that live on the north rim.

People who are real Arizonans or pretending to be are very proud of the fall color on the aspens. The singular is important. There is only one color, the yellow of the aspens. A few gambel oaks (*Quercus gambelii*) turning brown do not constitute an adjustment to the singular fall color.

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I started walking at about 6:30 in the morning, just after dawn, to give myself as much daylight for hiking as possible. During training hikes, I had been doing hikes of over eighteen miles routinely, with time to take pictures, catch lizards, have snacks, and generally enjoy the outdoors, but there were aspects of the hike in the Grand Canyon that I could not replicate during training, such as hiking down first and then up (all training hikes were up and then down on the mountains and hills around Flagstaff and Prescott) and the drastic temperature shifts between the rims and the river, so I assumed the hike might take longer. In addition, the hike in the Grand Canyon was the target hike, not a training hike, in which case, I thought I might need to spend more time taking pictures and catching lizards. One hundred thirty-five pictures provide evidence that I was right to think that I might want to spend more time taking pictures.

Early light on the heavily forested north rim of the Grand Canyon. The white cliff is Coconino sandstone, a layer beneath the Kaibab limestone that is covered in trees.

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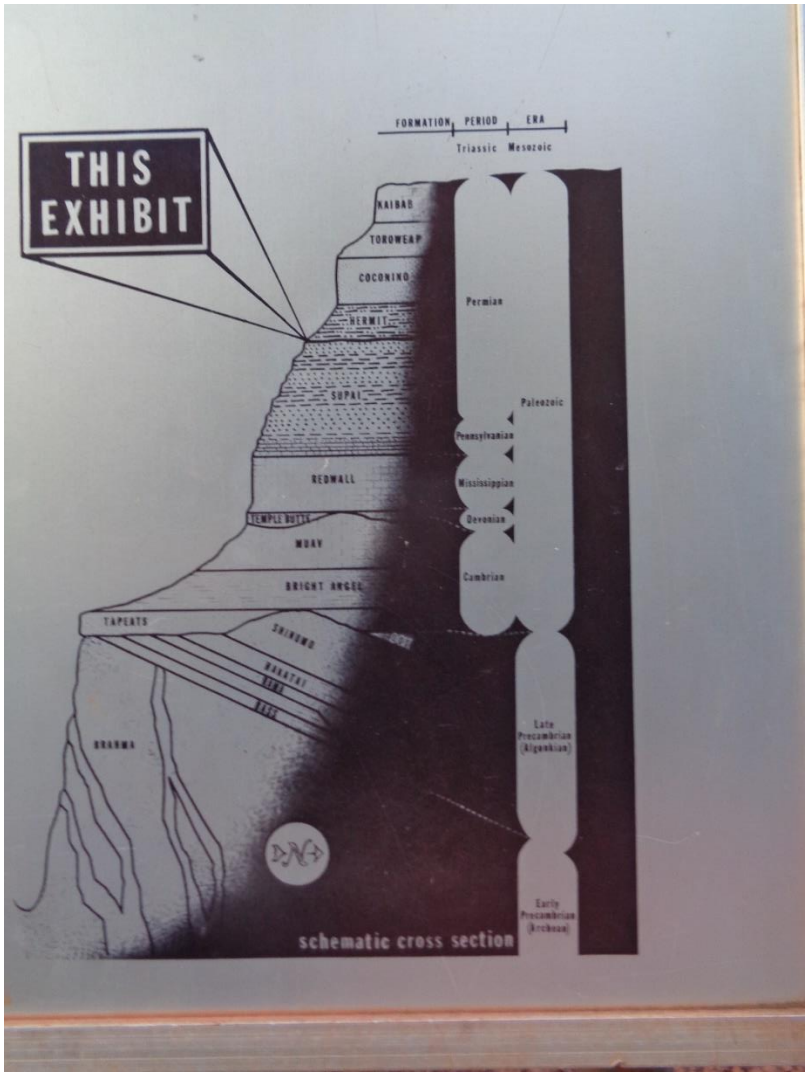
When I started hiking, the temperature was forty-four degrees Fahrenheit (6.666… degrees Celsius), and I started hiking with a jacket and mittens. It didn't take long to get my blood moving enough to make the jacket and mittens unnecessary, at which point, they became part of the luggage. Equipment and supplies for the day weighed about fifteen pounds (6.804 kilograms). That included the jacket and mittens; my favorite day pack (a light blue Dakine from the era before Dakine started making designer backpacks for quasi-literate undergraduates—what would an essay be without a little product placement?); two, quart-sized bags of sunflower-seed-and-raisin trail mix; a plastic knife with which to dig the tuna out of the envelopes; three, 2.6-ounce (73.709 grams) envelopes of tuna in sunflower oil; an ultra-violet water treatment wand; water-treatment pills (chlorine) in case I couldn't find water clear enough for the wand to be effective; a walkie-talkie; a cellphone; a camera; an emergency blanket and poncho; a flashlight and headlamp in case the hike took longer than the twelve hours of daylight I had; extra batteries for the lights; one hundred twenty Thermotab tablets and about three ounces of rock salt (85.0486 grams); and a gallon (3.78541178 liters) of water in four standard Nalgene bottles (from the era before Nalgene was making water bottles without bisphenol A, which turns out to be safe for adults in the amounts I've been getting from my water bottles for over a decade).

When hiking, one should not overlook overlooks.

The north Kaibab Trail is fourteen miles long (twenty-three kilometers) in general parlance and 14.25 miles long according to signs along the trail. The trailhead on the rim has an elevation of 8,241 feet (2,312 meters), which is about a thousand feet higher than the trailhead of the south Kaibab Trail on the south rim. I chose to hike the canyon from north to south in order to have less of a climb after a long day of hiking and in order to make the less steep trail the downhill portion of the hike. My knees get stiff if I hike downhill on steep terrain. I decided to hike with poles, on the recommendation of a woman who hikes the canyon frequently. Poles can cost a veritable fortune, $140 or more. I didn't want to spend that kind of money without knowing whether I liked them, so I bought a set for $35 (Mountain Hardware), and despite costing that much, they are telescoping and shock-absorbing, two features that typically add to the cost. 600 miles of training later, I'm still using them because they help on steep ups and downs. And I get to feel smug that I'm getting the benefits and features of more expensive poles without spending the money that the vast majority of people spend on their poles.

With approximately a mile (1.609344 kilometers) in vertical feet (the distance from the top to the bottom, or bottom to top, conceptualized as a straight vertical distance) on each side of the canyon, trying to avoid knee stiffness might have seemed pointless, but I remembered to take short, quick steps and not fling my feet out to the sides when shifting my weight. My knees were fine all day.



I did not need the water-treatment options that I took, but they are handy to have just-in-case. A water pipe had broken shortly before my hike, and no water was available along the corridor trails until the pipe was fixed, which happened the day before I hiked. There was no telling when the pipe might break again, and not having enough water is a quick and easy way to create an emergency.

The first water stop: I had heard that the pipe had been fixed, but I don't believe the NPS until I check—the dripping fountain and soggy ground were good signs. The drinking water at the Grand Canyon is piped from springs on the north rim and is delicious. The south rim does not have such springs.

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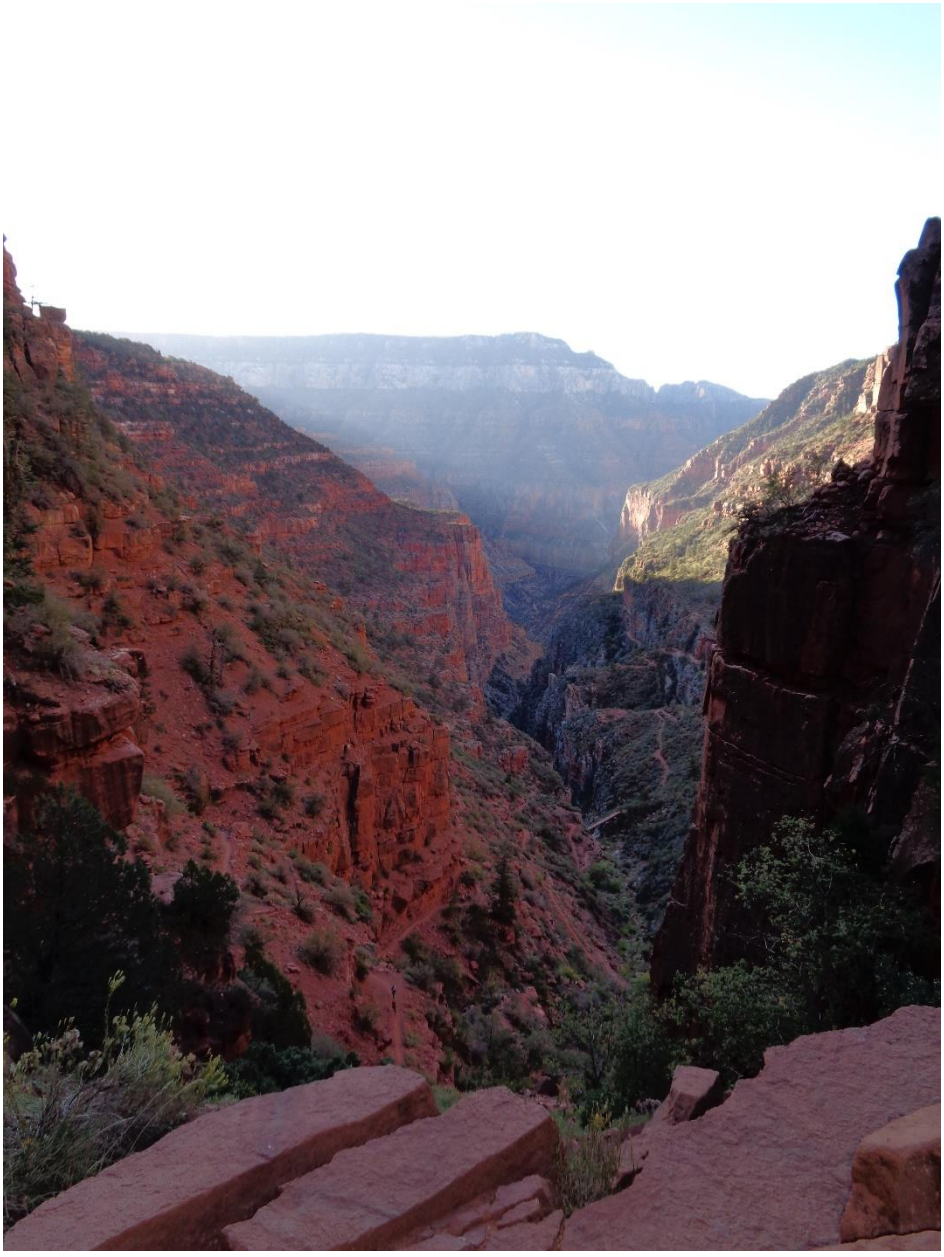
One reason I chose to hike the canyon rim-to-rim is to see how the different perspectives change the view. When on a rim, we can only look down at many of the features, such as buttes, arroyos, gorges, and sub-canyons (I have no idea how gorges and arroyos are distinguished, and I suspect there is no geographic distinction but only a whim from whomever is naming the feature), and the skyline is relatively flat and relatively straight. As I hiked, I found that the skyline changed, and I could look up at buttes and cliffs, which made the skyline less straight and flat.

Beginning to develop a more interesting skyline



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I hike alone. The National Park Service recommends hiking in a group to reduce the risk of mountain lion attacks. I looked up how many mountain lion (*Puma concolor*) attacks occur. No one, ever, in the entire history of the Grand Canyon National Park, has ever been attacked by a mountain lion. I'm not sure how we can reduce the risk of something that has never happened. I interpret the advice to hike in a group as just more evidence of a general cultural trend toward discriminating against and punishing individuality and individuals.

We can all be proportioned like supermodels if the angle of the sun is right.

It occurred to me, while I was hiking, that I might want to hike the canyon in the other direction, south to north, but I wouldn't have time on a day hike. In order to avoid missing out, whenever I stopped to take a picture, I turned around on the trail to see what might be happening in the other direction. This is a picture of the trail when I was facing up the north Kaibab Trail.

I was expecting more wildlife than I saw, but it turns out that most animals stay on the rims and do not use the interior canyon. The campgrounds within the canyon require all kinds of packaging in order to avoid having plastic bags floating around. The stated reason for this, according to NPS documents, is that NPS staff had to shoot twenty-two deer in the Phantom Ranch area who were starving after eating plastic bags. I would suggest that the deer were probably starving and then decided to eat plastic bags, but by this point, I'd largely given up on providing any editorial or logical sanity to NPS information and had decided to consider it part of the entertainment value of the hike.

The first lizard of the day, and the only one of this species who gave me time to take a picture. This was a young lizard, probably hatched in July, so this lizard will probably learn to be more cautious—or end up someone else's lunch. This appears to be a common side-blotched lizard (*Uta stansburiana*).

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Summer in the bottom of the canyon can be extremely hot, with temperatures up to 120 degrees Fahrenheit (48.889 Celsius). Some people hike at night in order to avoid extreme temperatures, but what's the point? I wanted to see as much of the Grand Canyon as possible, not merely the little circle of light that my headlamp makes in front of my feet, so I did not hike in the summer. This is some of what I saw when I turned around to look toward the north rim.

Given my experience with information from the NPS, I thought the pictures that were posted of north rim springs were probably fictional, but, no—the springs do exist. They all emerge from the same layer of rock, and they come in various sizes and shapes. The next picture is of this same spring, but zoomed out to show the helicopter pad. I was initially concerned about what would happen if, for the first time in my hiking career, I had a serious injury that prevented further ambulation, but I read someone's blog about this; he had to be helicoptered out for some kind of medical emergency. The charge for that was $85. I didn't want a medical emergency, but a helicopter ride in the Grand Canyon for only $85 is a deal.

Springs on the north rim

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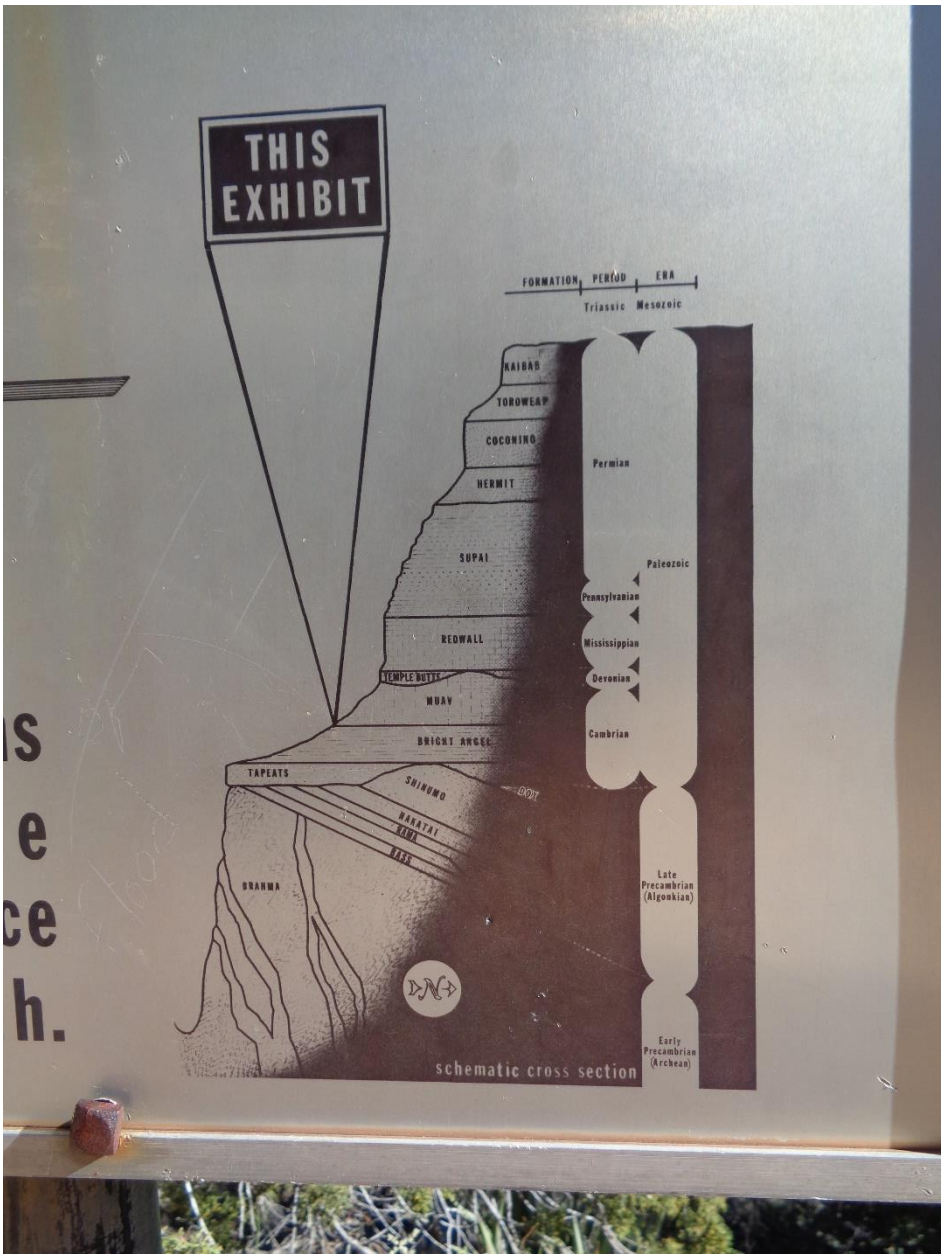
This sign shows the progress I was making into the canyon. Sadly, it was the last such sign on either side of the canyon. The rest of the sign noted the many kinds of aquatic fossils that are in the Bright Angel shale, including trilobites. I'm a huge fan of trilobites. For a while, I spent an inordinate amount of time looking at fossils and hoping to find a trilobite fossil. Are Grand Canyon trilobites similar to or different from upstate New York trilobites? This hike did not answer that question.



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This rock has fossilized trails from various aquatic worms and possibly trilobites. The animals made the trails in what used to be sea floor. I love having sea fossils in arid canyons in desert states.

This rock has crystal fossils of a crinoid base. Crinoids attached themselves to rocks with these kinds of bases, which they could retreat into if threatened. Crinoids fed by emerging from the bases to wave in the passing currents, eating whatever bits of organic material floated past.

The Most Hike, Marla Perkins, Ph.D., October 2015

Part of training for a long hike is taking long hikes. I rarely do any one thing for any length of time, and one of my challenges is being able to enjoy doing one thing all day long. It helps to have many interests: geology, anthropology, entomology, paleontology, botany, etc., but it remains to a challenge to find things interesting all day long. I make it a point to be fascinated (some people take my disciplined fascination as a sign that they are fascinating, which results in a variety of amusing misunderstandings—amusing to me, at least). This hike did not present the same challenges. The vegetation changed as I hiked, the layers of rocks had different options available, including crystals and fossils, the weather was gradually shifting all day long, and the lighting changes made the visual input diverse, even for similar phenomena. The more I hiked, the more things changed, and that motivated me to continue hiking.

More sea-floor fossils—I don't know, but it was an interesting picture.

The Most Hike, Marla Perkins, Ph.D., October 2015

Since first visiting the Grand Canyon in 1991, I had wanted to hike to the bottom and back. I wasn't sure how to do this, but I was hopeful, when I moved to Arizona, that I'd be able to make the hike happen. I put the hike on hold for a couple of years because everyone I talked to (not a representative sample but people who should know: employees of the National Park Service) said that a rim-to-rim hike couldn't be done in a day, and that if it was done, it was dangerous and unpleasant. The people who insisted on impossibility and unpleasantness ignored the fact that thousands of people per year do a rim-to-rim hike. I just hadn't met the right people. Once I met the right person, a woman who hikes compulsively, I was on my way and having a wonderful time within four months.

Unlike many other places I've hiked, there were no signs along the Kaibab Trail instructing hikers to stay on the trail. That rule is self-enforcing in many places, here by a cliff and a prickly-pear cactus with ripe and ripening fruits. Advice that makes sense, such as staying on the trail, is self-enforcing. Advice that does not make sense, such as not hiking the canyon in a day, at best creates unnecessary delays.

After I passed the large spring, the trail followed a creek that is a tributary to the Colorado River. The pipeline that takes the water to the south rim is also along the trail and provides some explanation for why the trail is where it is and how it is. Recognizing that pattern gave me trail markers to follow in places where there might have been a question about where to go: I followed the B&C Water valves along the pipe, which was usually buried.

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For about seven miles, I was leap-frogging with another hiker (I would pass him while he was stopped for rest, water, or pictures, and he would pass me when I was stopped for rest, water, or pictures). He was in his sixties and was preparing for the same hike that I was taking. He was hiking only the first seven miles (11.265 km) of the north Kaibab Trail in order to see how the temperature changes affected him, and he hoped to make the whole hike to the south rim on the following weekend. Unfortunately for information purposes, the first seven miles of the north Kaibab Trail were perfectly pleasant. I didn't reach 85 degrees Fahrenheit (29.444 degrees Celsius) until 10:30 in the morning and 8.5 miles (13.6794) into the hike.

Swirly rocks

Toward the bottom of the canyon, the trail leveled out significantly, and I could enjoy the skyline and the clearer trail. The mule trains for tourists use the corridor trails. For the first few miles from the rim, the mules defecate frequently and extensively. The stench is amazing. After about five miles, the mules have worked out their intestinal reserves. At this point, I was enjoying the fresh air and not needing to dodge piles and puddles.

The sun climbed ever higher during the first part of the hike. This view of xeric vegetation is looking up toward the north rim, which is visible in the far background, about ten miles (16.0934 km) away.

When I started training for this hike, I was comfortable with 10-12 miles of backpacking because I had just returned from my backpacking vacation on the Finger Lakes Trail, but I needed to double that distance and prepare for more strenuous hiking conditions and check equipment under varying weather conditions. At this point in the hike, my training was beginning to become useful.

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I love a thriving agave. There are over two hundred species of agave. They are monocarpic, meaning that they bloom once and then die, but they do not live up to their "century plant" common name—they can bloom long before they are one hundred years old. I have not had the time as yet to figure out which species this is, but it does not appear to be a blue agave, the only species from which tequila is made.

The Most Hike, Marla Perkins, Ph.D., October 2015

The springs on the north rim of the Grand Canyon flow down through and over and under the rocks until they reach the river. Sometimes, they form small waterfalls and provide enough water that moss can grow on some of the rocks.

I crossed every bridge I came to, including this one to the sunny side of the stream. I would have preferred to stay on the shady side, but as noted, this trail has self-enforcing edges. Hiking shoes would not have been adequate equipment for staying in the shade. In order to protect my pasty-white skin from the aggressive sun, I was covered head-to-toe. I had a black hat with a wide brim, my long-sleeved Finger Lakes Trail shirt, gloves, sunglasses, a light scarf to protect my neck, long fitness pants over compression sleeves for my calves, and my hiking shoes and socks—only a burka could have provided more coverage. Each item was chosen and tested for functionality, but for the first time in my life, I received compliments from bystanders on my fashion sense.

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The base rock in the Grand Canyon is a combination of Zoroaster granite (pink) and Vishnu schist (dark). It is my favorite layer to look at when up on the rim because I enjoy the light and dark interactions, and it is as much fun up close, as well. This picture shows the shear pattern of the Zoroaster granite.

Another species of lizard—I have taken two pictures of lizards of this type, but I have been unable to find any identifying information about them. They appear to have quite a range: I found the first one at the Wupatki ruin northeast of Flagstaff, and this one near the bottom of the Grand Canyon.

Insects were the other major category of wildlife that I saw while hiking. This butterfly joined me for part of the hike. It might have been too hot to do much flying. Or my anti-sun scarf smelled terrific from the all of the sweating I was doing. Both sweat and urine contain uric acid ($C_5H_4N_4O_3$) and ammonia (NH_3). I don't know what butterflies find attractive, but they come flocking for urine—and for sweat, which contains higher concentrations of ammonia as exertion is prolonged, which leads me to cast my vote for ammonia. At this point, I had been hiking for nearly five hours, and I was a butterfly magnet.

Here is where a picture could be that I didn't take. Instead, I took a picture over some of the vegetation near the bottom of the canyon. The picture that I did not take was of a massive area covered with enormous grasses. The grasses are taller than I am, and when I was hiking in them, the light along the trail was questionable, and I decided not to try to convince the camera to get along with a striped mix of light and shade. I am not tall enough to reach over the grasses to take a picture. Instead of the picture of the grasses, I am including another picture of the creek valley.

A couple of campgrounds are located on the north bank of the Colorado River, Phantom Ranch and Bright Angel. Where the creek levels out and the cliffs are not as close, there is room for cottonwood trees (*Populus fremontii*, probably), the ferociously green trees, to grow. There are places to picnic, cabins, and tent sites, as well as NPS personnel who manage the camping and are available for people who need assistance. When I was back up on a rim, I heard someone explaining that there was a hotel at Phantom Ranch. The facilities are adequate but rustic, and I would not call even the available cabins a hotel.

I thought of trying to get a back-country pass so that I could camp if the hike proved more exhausting than anticipated; I can't plan far enough in advance to get a pass. However, camping would necessitate hiking with more gear, which would in turn make the hike more exhausting. I decided to train better and carry a lighter load. I just helped myself to some water at the campground.

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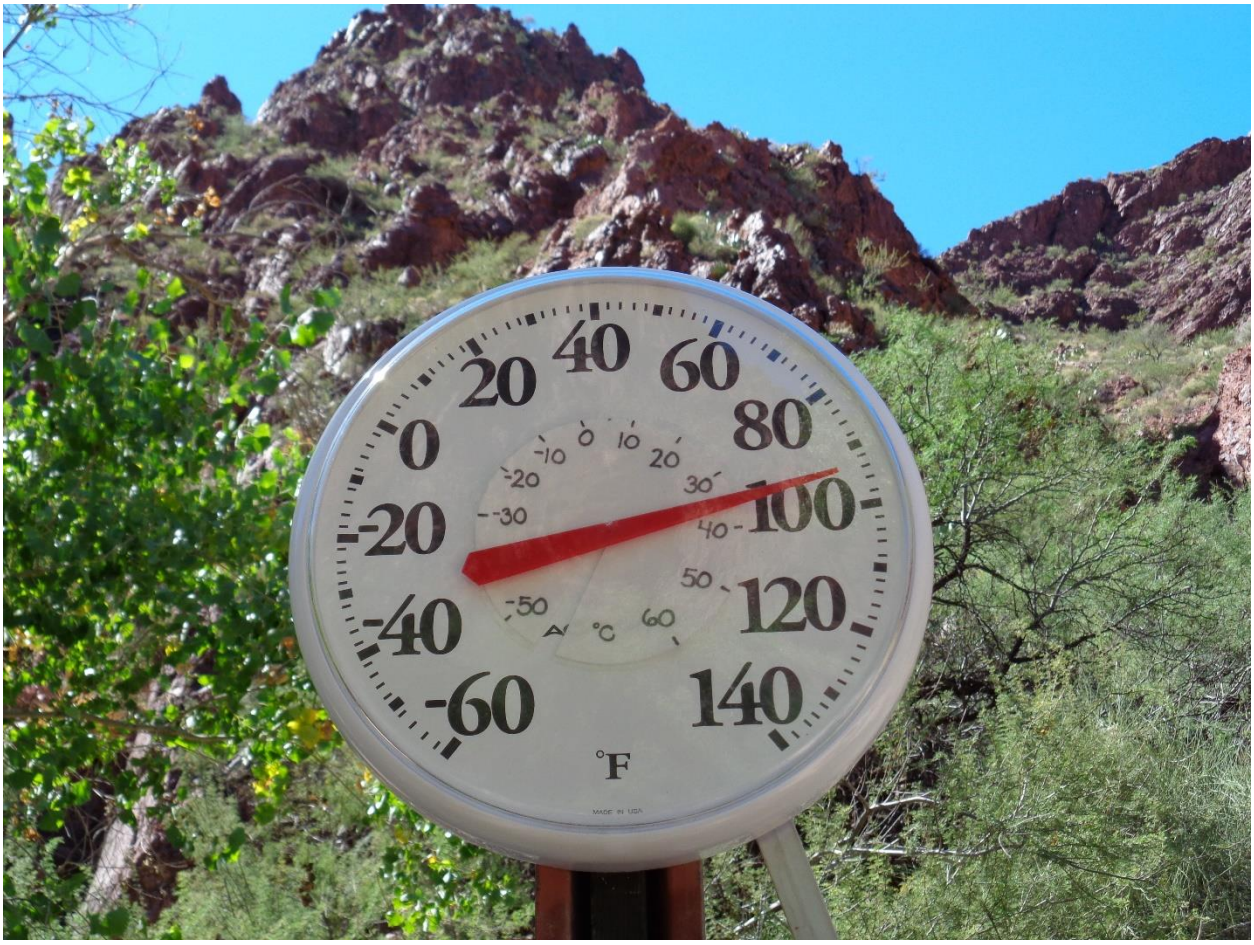
The official temperature at the bottom of the canyon was ninety-four degrees Fahrenheit (34.444… degrees Celsius). I prefer to hike when temperatures remain below eighty, but ninety-four is preferable to 107, which had been the temperature at the bottom the previous weekend.

I thought about hiking in November when the temperatures at the bottom of the canyon would be more reasonable. However, the road to the north rim closes at the end of October, regardless of weather or road conditions. People don't often believe me when I tell them that the weather in Arizona is entirely dependent on altitude. The rim of the canyon has weather like Flagstaff, and the river has weather like Phoenix. At least this was a hikeable temperature, unlike the Phoenix-in-summer temperatures that create medical emergencies.



In theory, the Kaibab Trail is all one trail, but it is often divided into north and south segments, probably to provide more precise information. There are no campgrounds or sources of water on the south Kaibab Trail, which is why no additional destinations along the trail are noted.

The Colorado River has an informative sign. Swimming is not permitted, but there is a boat launch, in case hikers decide to carry a boat up and down the trail with them, or in case the people who are doing multi-day rafting trips camp at this location. I did not bring a boat; trying to minimize the weight I was carrying precluded carrying a boat. I did visit the river, though, and the boat launch provides a place where people can access the river without a lot of beating through the bush. The beach area in these pictures is the boat launch.

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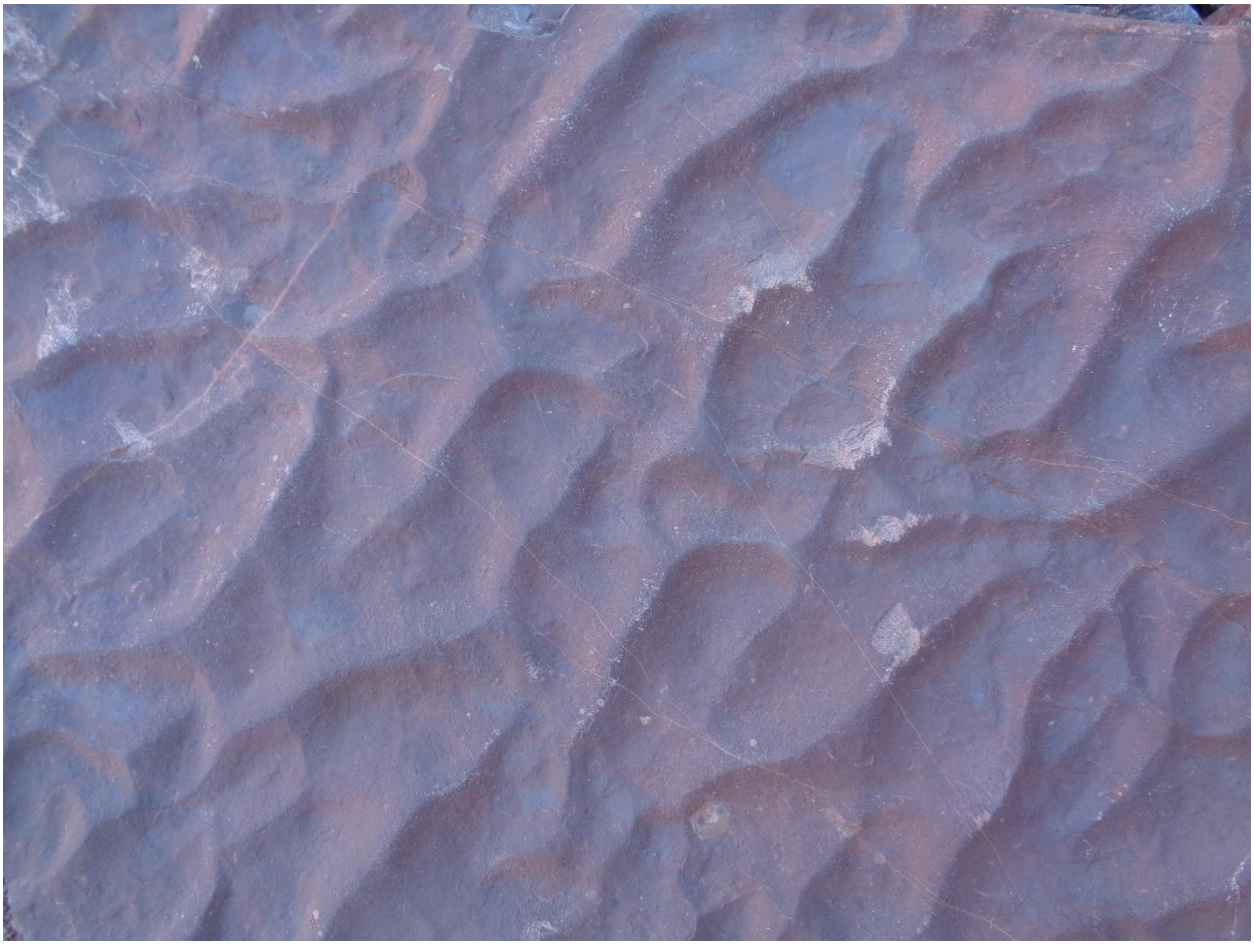
I crossed the Colorado River on the black bridge. It is the easternmost bridge across the river in the park. I had to wait to cross it while a group of mules and tourists crossed. The protocol for mules is that hikers stand to the canyon side of the trail and follow all instructions from the person who is leading the mule train. Unlike mountain lions, mules have been involved in injuring people. It doesn't often happen, but they have occasionally lost their footing, and in one case, the mule rolled over the passenger. That person needed to be rescued by helicopter, and in the spirit of continuing to avoid emergencies, I stood well off the trail and waited while the mules passed.

The bridge across the river, after I had crossed it, looking toward the north bank

On the way back up, on the south side of the river, I could look back and see the creek's delta where I had come out from the creek to the river.

About a thousand vertical feet from the river, I found fossilized pieces of the bottom of a body of water.



The south Kaibab Trail does not follow a creek, and in general, there is less greenery and more rock on the south rim trail. I was threatened with a lack of shade (thank you, NPS), but my decision to hike north-to-south was based partially on the angles that the trails take. The north Kaibab Trail angles toward the west when hiking down, so I was not walking into the sun during the morning portion of the hike. The south Kaibab Trail angles toward the east when hiking up, so most of the time I was not walking directly into the sun in the afternoon. In addition, some of the buttes provided shade.

Without making a conscious effort, I began to use the major layers of rock along the south rim to determine where I was, approximately, with respect to the rim. I remembered the layers I had passed on the way down the north side of the canyon and knew how many I had to pass on the way back up the south side. The vegetation could not provide orientation because it was different on the south side and sparse, but the rock layers were the same on both sides.

On the way up the south Kaibab Trail, I was leap-frogging with a French man who now lives in Iceland and who was walking the south Kaibab Trail to the river and back in one day, despite advice to the contrary. He was doing fine, but he did need information about the trail and about the River Trail, which connects the south Kaibab Trail and the Bright Angel Trail on the south side of the canyon. It's a phenomenon I do not understand, but people on trails wherever I am hiking, even if it is the first time I am hiking any given trail, as was the case in the canyon, seem to think that I know what I am doing. I had no idea what the answer to his question was, but I did have the map. We consulted the map, and we both learned about the River Trail. I was trying not to take any side trails, so I continued on my way. His goal was to reach the river, so he continued toward the black bridge and boat launch. He passed me several times on the way up the south Kaibab Trail. I passed him several times, here when I bypassed a place where many people stopped for snacks and drinks.

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I thought of hiking on only the south rim of the Grand Canyon, which is where the most popular trails are, with the most opportunities for refilling water bottles, emptying one's bladder, and getting help if needed. However, after taking a camping trip to the north rim last summer, I decided that I would prefer to explore both sides of the canyon; they are very different climatically with very different flora and fauna. Seeing only one side of the canyon is exactly that: seeing only one side

This spotted ground squirrel (*Spermophilus spilosoma*, so I think) enjoyed the view.

Although I was told, by NPS information, that there are no facilities on the south Kaibab Trail, I found that there were a couple of outhouses with composting toilets, the same sort of facilities that were on the north Kaibab Trail but without places to refill water. Having been a backpacker for some time, I now consider any kind of toilet a facility.

The south rim has large shoulders. While I was crossing this, I had an opportunity to climb less steeply. Someone told me that I only needed to train for six weeks, but I ignored that non-advice. I have to expand physical exertion very gradually, and I did. It also takes longer than 6 weeks to develop the relevant callouses, something the would-be benefactor was not considering. I can have my quadriceps prepared sooner than six weeks, but hiking longer distances, or doing anything longer, requires that non-major muscle groups be prepared, and that preparation takes longer than six weeks. I also needed to check on how my salt and water needs changed under changing weather conditions in order to bring appropriate quantities of both. I took my time with training and with the hike and appreciated the shoulders when they were available.

There are no trees at this altitude on the south rim.

The farther up I hiked, the less significant the interruptions in the skyline became. The south rim of the canyon was reemerging.

The skyline continued to level out.

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A wildflower I had not encountered previously: rubber rabbitbrush (*Ericameria nauseosa*)—I can't imagine how to beat a name like "rubber rabbitbrush".

The flat, straight rim was almost back at this point.

The road along the rim is fairly close to the edge in places, and as I was seeing the south rim from the trail, I could hear the traffic along the rim. I hiked about three miles while being able to hear the cars and shuttle busses, but I could not see the traffic, because of the scrubby trees, until I was back on the rim.

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This was the last picture I took before I reached the top of the south rim at about 5:30 p.m., almost exactly eleven hours from when I started at the top of the north rim. My ride told me that I was still hiking along as I came up the last part of the trail, not trudging, as many other people were doing. I was tired, however, and once I had cleaned up and gone to bed, I slept for thirteen hours straight.

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While recovering from the hike, I returned to the canyon for a short walk the day after the longer walk. The large fauna stay out of the canyon, but I frequently see elk (*Cervus elaphus*) when I'm at the canyon. This large bull was grazing on a pile of brush that forest service personnel had piled up. Eventually, these piles will be burned; the idea is that burning the brush from under the trees will help to prevent the incidence and spread of wildfires. Forestry in northern Arizona is about fire.

The Most Hike, Marla Perkins, Ph.D., October 2015

I think of hiking the Grand Canyon as the most day hike. It's not entirely grammatical for semantic reasons, but here's why I want to adjust the semantic requirements of "most" for an intervening adjective. The day hike in the Grand Canyon was the most extreme day hike I've ever taken, with a fifty-degree temperature shift throughout the day and a vertical mile down and another back up. It was the most expensive day hike I've ever taken, requiring some new equipment, including poles and pressure sleeves for my calves, camping before and after the hike, and a lot of gasoline. It is the day hike that required the most planning and training; I usually take day hikes without a second thought, much less three months of planning and preparation. I'd like to do it again.

The end