

Ask A Biologist Vol 066 (Guests: Liz Smith and Justin Olson)

A Hiking Adventure

No more than a short drive from downtown Phoenix Arizona is South Mountain Park. Dr. Biology spends a Saturday morning hiking this large desert park with rangers Liz Smith and Justin Olson. Listen in as they give you tips on how to get the most out of your hike and also give you a preview of the treasures await you.

Transcript

Dr. Biology: This is "Ask-A-Biologist." A program about the living world, and I am Dr. Biology. With a real short drive, I've pulled up into the South Mountain Park. This is just outside of downtown Phoenix. I'm going to do something that a lot of you may not have done. I'm going to go on a hike. But that is not the good part. I get to go on a hike with a Park Ranger, and not just one Park Ranger, I have two special guides today. I have with me, Liz Smith.

Liz Smith: Good morning, Dr. Biology.

Dr. Biology: And I have Justin Olson.

Justin Olson: Good morning, Dr. Biology.

Dr. Biology: We're going to go hiking the mountain. You can think of this as your private tour, but since this is much like radio, you have to also make plans to get out and hike the mountain yourself. This show will help you do that. It'll help you get the most out of your trip, and let you know what to look for. Because there is a lot of things to see, but if you are not used to hiking in the desert you might think it's pretty barren. But as you go, I think you'll find out there's a lot to see and learn.

What's one of the first things you could do if you haven't been to a park before? What's one of the things you want to do?

Liz: Well, heck, even before you leave your house you can go online and check it all out. If you weren't able to do that, at the start of all our trailheads we have some maps, so you can know what you're getting into.

Dr. Biology: Justin, if I come up here and I look at this map, what am I looking for?

Justin: Well, a great place to start is to pick one trail and stick with that, and plan your route out and back and make sure you have enough water.

Dr. Biology: Water, yes. We can't say that enough. You'll go through a lot of water here, and so, even though you think you're good at not having to have a drink, it's different out here.

I actually see, you have a QR code. Those are those funky looking graphics that, if you have a smartphone, you can actually click on it. What is that going to do?

Liz: Well, it's going to actually download onto your phone the map of the trail that you're doing right now.

Dr. Biology: Perfect. You can take it with you, so you don't even have to memorize what's going on here, you have the trail. Let me do that here. I have to get out my iPhone. Forgive me, I've got to get it unzipped out of here. [Sound of zipper.] I'm going to go up and I will zoom in on it and I will snap a shot. [Camera shutter sound.] Sure enough, there, I've got the map. Perfect.

[Walking sounds]

I have come to a point where Liz is pointing out something here, so what are we looking at?

Liz: What I think is really cool about South Mountain Park are the petroglyphs that are all over the trail that you can just walk right by and be an arm's distance away from them.

Dr. Biology: Right, and actually, I didn't notice them. How do you keep your eye out for them so you know what they look like?

Liz: What's really cool too is different times of the day, different weather, you're going to see them in abundance or you're not going to see them at all. High noon, you won't see anything, just the way the sun is shining on them. But today, with the clouds and early in the morning, we're seeing the coyote pop right out of the rock.

Dr. Biology: About how long ago were those probably made?

Justin: Anywhere up to about a thousand years ago, possibly even more.

Dr. Biology: Wow, a thousand years.

Liz: Most times, to see art like that, you have to go into the museum, and here you're out in nature seeing them.

Dr. Biology: Absolutely, and you're getting exercise. Do you know how many petroglyphs are here?

Justin: In South Mountain? Thousands.

Dr. Biology: Thousands. Do people ever discover ones that you haven't seen before?

Justin: Absolutely. I actually work with the Maricopa County Site Steward Program, go out with them, and every time we've been out we've found new petroglyphs that we didn't know about.

Dr. Biology: We were talking about the map at the beginning of this episode. Is there such a thing as a map of the petroglyphs?

Justin: They're top secret, I have to say, just to prevent vandalism. They're held in high regard. But if you come on certain ranger-led hikes we offer through the year, then we sometimes can take you backstage to see some of those.

Dr. Biology: So you can get a hike arranged with a ranger?

Justin: Absolutely. I believe hopefully in November we're offering a petroglyph hike, and also through City of Phoenix, the Pueblo Grande Museum. They offer petroglyph hikes.

Dr. Biology: That makes it perfect time of year, as well, November.

Justin: Really is a great time.

Liz: There's also a book out there called "Landscapes of the Spirits." It's all the petroglyphs that were known at the time in South Mountain Park, and they're placed in localities, so we're not saying exactly where they are, but we're saying in this generality you will find these pictures, these images. Another thing about this location right here is you get an idea of exactly what you're going to be getting into, so if you didn't know what your hike was going to look like, at this point you now do. We're starting from this low point, and if you look ahead you can see how the trail just goes up, up, up all the way two and a half miles to the top of Dobbins.

Dr. Biology: Two and a half miles. We'll see if Dr. Biology makes it two and half miles. You get your markers here as well, right?

Liz: Right. A lot of people get confused about the markers. They were placed into the park seventy years ago, so there's no real rhyme or reason to them. When you see them, they're not spaced out by mileage. They're just put in junctures where, "Oh, I'm not sure which direction to go now," and then there should be a trail marker that just kind of points you, again, into the right direction.

[Walking sounds]

Justin: Over to our left, we're actually getting ready to approach the big arroyo, or the large wash, and then start climbing on our hike. But off to our left, up on the ridge, I definitely recommend bringing a nice pair of binoculars since it is off-trail, but you can look up and see some wonderful water birds, possibly herons. They're depicted in some beautiful rock art above the wash here.

Dr. Biology: As I look up on the ridge here, I see something that looks kind of ominous. Did someone take a fall?

Justin: Well, actually, today I think we're very lucky. They're just training. It's CAMRA, Central Arizona Mountain Rescue Association. It looks like they're doing the skill-set test, getting ready for their finals to, hopefully, become a full-fledged CAMRA rescuer and be available to help out in mountain parks and preserves if needed.

Dr. Biology: That brings up the idea of safety. We get people that don't always think about what they should be doing. Liz, what are some of the things to watch out for if you're going out hiking, even if you think you're good?

Liz: There is a whole concept out there called 'leave no trace ethics.' It's something that the City of Phoenix embraced a few years back. What it does is it just prepares you for your hike. It makes you think prior to going on your hike, "What do I need to do? What do I need to bring

with me? Who do I need to tell?" I think the most important thing is tell somebody. Tell them, "I'm going hiking on the Whole Bird Trail. I'm starting at 6:00 AM, I'm going to be done at 7:30. I'll give you a call when I'm off the trail."

That way, were something to happen to you, we know where to look for you, and folks like CAMRA, or the Phoenix Fire and Police, or us, as park rangers, will come out and look for you.

Things that you can do to prepare. Of course, bring enough water. Bring more water than you ever think you would need. Prepare for the best, plan for the worst. Wear proper clothing.

A lot of people think in the summer, "It's hot out here. I don't need to wear anything," but actually, more skin exposed to the sun is going to be your enemy rather than your friend. Wear loose, comfortable clothing.

Good shoes. Flip-flops are not the place to be hiking in the desert. If you're a sunscreen wearer, I highly recommend it. A hat to keep the sun off your face, something with a brim so it's not on your neck and your ears. What else?

Justin: Yeah, the only thing I would add is you should definitely bring a cell phone. You never know when you might need it to get a hold of someone. Then, always have snacks to keep your blood sugar up. You don't want to crash at the top of the mountain and not have the energy to get out.

Dr. Biology: I also see they're preparing in an area that I suspect someone shouldn't be hiking anyway. Is that what happens sometimes?

Liz: Right. That map that we saw showed you trails on a mountain. We're asking you stay on the trails. Stick to the trails, you're not going to run into problems. It's when you go off trail that you don't see the snakes that are camouflaged into their natural habitat. You don't see, maybe, the hole that would have jumped out at you on a cleaned off path. Stick to trails, don't go off trail, you're not going to run into problems like this.

Dr. Biology: People often ask, "Are there a lot of snakes here? Are there Gila monsters? Am I going to get bitten?" My usual answer, and you can tell me if I'm wrong is, "Typically, if you get bitten, you were doing something wrong." The other one is, "Don't put your hand or your feet anywhere that you can't see where it's going."

Liz: Yeah. Typically, if you're a 44-year-old male to 24 years old, you're going to be the one getting bit by the snake because you're sticking your hand exactly where it shouldn't be, but if you stay on the trail, that snake, you're going to see him on the trail. He is going to contrast to the sand, and he's going to pop out and you're going to be able to change your movement. You're going to hear him, you're going to see him, you're going to stop. You're going to watch him, you're going to say, "Oh my gosh, how cool is this that I encountered a snake on the trail?"

Then, if he doesn't move off the trail, you're going to change your plan, turn around, go back, come back another day.

Dr. Biology: I'm an avid photographer, so one of the things I would add to that as well is use your zoom lens. Don't try to take your iPhone out and do a close shot of the snake or Gila monsters.

Liz: Exactly, and like a pit bull, they're able to detach their jaw. Rather than just one big bite, what they're going to do is grind back and forth and back and forth.

[Walking sounds]

Dr. Biology: Not far from the training for the mountain rescues, Justin looks off the edge here. What did you just see here?

Justin: We're just getting ready to go into that wash, and I look off to the right. Because we had the large amount of rain last night a lot of fun treasures are unearthed. We saw a nice shard of Hohokam pottery laying off to our right here. Just looks like a red on buff, an inch by inch square of Hohokam pottery.

Dr. Biology: Interesting, because I wouldn't have picked it up either, at least I wouldn't have seen it when I was walking along here.

Justin: Yeah, we find them all over the mountain, all over the deserts of the Southwest. Once you start seeing them, just like the petroglyphs, once you train your eye, they start popping out every time you go hiking.

Dr. Biology: Oh, and so the petroglyphs, these are at least 1,000 years old. That's pretty impressive.

Liz: Like Justin said, you just never know where you're going to find them, but there is a little bit of a tool that you can use. A lot of times the Hohokams used the washes as paths that they would go by because that's where the animals would be attracted. That's where the water would be, so oftentimes, around washes you're going to find petroglyphs, you're going to find the pottery shards. Also, if you look over to Four Peaks, and Four Peaks were very spiritually important to the Hohokam Indians. When the sun would come up, it would come up in the middle of those peaks. Oftentimes, when you're hiking and you look and you can see Four Peaks, I always turn around and look around me, and I generally find a Hohokam petroglyph in that area.

Dr. Biology: I see. They got their inspiration there, and that's where they would actually do some of their paintings.

Liz: Pecking, actually, where they would peck into rock and they would use it as a guide, like a solstice guide. The sun would come up and cast a shadow, or illuminate the rock with light, and so to them that would be a spiritually interesting rock. Then they would peck into that rock.

Dr. Biology: Pecking, that makes sense. That's why they're lasting for so long.

Liz: Exactly right. They would peck into something that had a patina or a desert varnish on it. It would be a darker color, so as they pecked, they would expose the lighter color of rock underneath.

Dr. Biology: What happens if someone finds a piece of Hohokam pottery? Can they take it?

Justin: Absolutely not. It needs to stay exactly where it is. You remove the piece, not only are you taking that history away from other people who may come across it and be fascinated and interested with it. It's losing its provenience, or its losing the importance of its location, so that knowledge would be lost forever, and can go to jail and be fined, so. [laughter]

Dr. Biology: Well, that last part, if the other part didn't work, certainly should be taken into consideration.

[Walking sounds]

Okay so here we are, walking along a wash. This is a classic desert wash, which reminds me, do you get flash floods around here?

Liz: We can. We are the low area washes are generally in the low areas. What they're going to do, the water is going to hit the top of the mountain, like it does everywhere. It's going to rush down to the lowest point. It's going to collect into the wash. So, when all the water collects, and if it's a fast moving storm, you're going to get a lot of water moving, hence a flash flood.

Dr. Biology: I've had colleagues who have actually heard a flash flood. It almost sounds like rolling thunder.

Liz: It really does, and it moves things. It moves boulders. It goes up and around and creates an eddy, and it can move gigantic things. If your car were to get caught into a wash, it will move your car down the stream. Also, if you look around us as a whole, there's not a lot of green everywhere, but when you look in the wash you see a ton of green. You see all the trees on either side. You see the bushes are more condensed. It's the riparian effect. If you are going to have water in a desert, this is where it's going to be, and so a lot of your plant vegetation is going to grow in this area.

Dr. Biology: I see what looks like a typical palo verde, or palo brea type of tree. They're pretty common. What's this, right here, this one? It looks like it's got these beautiful little soft balls on it.

Liz: That's the creosote bush, prolific throughout the desert. It's interesting; they're coming up with more and more that the creosote is important to. One of the things is that they actually put out a chemical through their roots. If you look at them in their natural habitat, you're not going to see creosote on top of creosote on top of creosote, or any other plant around them, because they're going to protect the area around their root ball so that they get all the rain when it rains. Nothing else can grow in their immediate vicinity.

They put out some kind of chemical that stops other plants from growing there. It's an adaptation that they've come up with that allows them to grow in this harsh desert climate.

Dr. Biology: Now, is it also the creosote bush that, when we get the rains, you get that nice aroma?

Liz: You certainly do. If it is not a rainy day, you can actually cup your hands around the leaves and breathe on it, and then the smell will come back to you, that smell of rain.

Dr. Biology: There's a tree over here. What is this one?

Justin: This is the ironwood tree. It's one of the tallest trees of the Sonoran Desert. It's also only found in the Sonoran Desert, so we're very lucky to have it. It gets its name, ironwood tree, from the density of its wood. It's so dense that it won't float. Even after a tree is dead for 1,000 years, remnants of the tree will still be standing.

Liz: In the springtime it's gorgeous. Most of the year it's kind of an iron, dusky gray color with a grayish leaf color, but in the spring, all the sudden it just pops, and it's covered with tiny purple flowers. It's beautiful.

Dr. Biology: I look up in here. I guess it's not, but it looks almost like a nest up towards the top, doesn't it?

Liz: Right, but it's mistletoe. It's actually a parasite. It grows in a lot of the different trees around here, in the desert. The Phainopepla is the bird, generally, that causes this type of thing because they eat different berries, they sit on the tree. They eat, actually, the mistletoe berry. They'll sit on the tree and then they will produce more mistletoe from the seeds that they excrete. It will eventually, over enough time, kill the plant, but it has a kind of a symbiotic relationship, where they feed off of each other, and it actually attracts wildlife. So it's not a horrible thing.

Dr. Biology: Did someone say something about it being a nurse tree, also?

Liz: Exactly right. It is a nurse tree. What happens, again, in a harsh desert environment you need every advantage you can to actually grow into full maturity. So a lot of times, plants, cacti, saguaros especially, will start their life underneath an ironwood tree, or perhaps a palo verde tree, or maybe even a bush. Their likelihood of getting to adulthood intensifies because they are given shade. The water, generally, in the root area will come to them. Eventually, again 100 years down the road, they will kill the plant. They will eclipse it, they will outgrow and take more water than the tree that it was being nursed by.

Dr. Biology: Right.

[Walking sounds]

Another advantage I see for staying on the trails is it makes it much easier to walk. You don't have to struggle as much through the bushwhacking part of the desert.

Liz: Plus, it also is a path through wildlife. If we stay on the trail, we're also allowing all the animals that live here, in the desert, to have their own habitat. We're giving them their space, and we have our little space to stay in.

Justin: Also, we're being invited into their homes. It's really just being respectful, staying in our space, and not ruining their habitat.

Dr. Biology: Exactly, so hundreds of years from now other people can enjoy this place as well.

[Walking sounds]

One of the other interesting things about South Mountain Park is that you are really, really close to the urban Phoenix area. You look off to the side here, and you can see downtown Phoenix with a mountain skyline of all the buildings that have been built there. That's one direction. You look the opposite direction, and we have South Mountain. It's quite a contrast, and it means it's just right outside your backdoor. It's very easy to get here.

Liz: That is so cool, because living in Phoenix, Tempe, Scottsdale, Mesa, wherever, in 20 minutes you're in the mountains. Then, 20 minutes into the mountains, you feel like you're nowhere near a city. You are alone in nature.

[Walking sounds]

Dr. Biology: Well, you're right. We're walking along, and the next thing I see is a whole array of petroglyphs. What's the story behind this group?

Justin: Wow, there's a lot in this panel here. We see turtles and what looks like snakes and possibly suns or eclipses. Then also, it looks like a lizard figure, a reptile, or probably a chuckwalla. What's so neat about the chuckwallas in South Mountain, the males are the only subspecies of the chuckwalla that have a bright orange, or sometimes it looks like a reddish tail, which is really only found in South Mountain here. It's very interesting. Also, this lizard has a large inflated stomach, and that's actually a natural defense for the chuckwalla.

If it's in danger or somebody's trying to bite it or going after it for dinner, they'll crawl into a small space and inflate their stomach. So at most, that predator would only be able to grab its tail, and that swollen stomach helps keep it safe in that small space.

Liz: The other thing you notice is there's a little fence here. We know these petroglyphs are really cool. We know people want to see them, so we put a fence barrier that you can get really close to them. But we ask that you don't go past the fence because oils in your hand can actually ruin these rocks and ruin these images.

Dr. Biology: I see a runner running the trail.

Liz: We get runners on the trail. We get hikers on the trail. On the mountain as a whole, we get mountain bikers. We get road bikers. We get road runners -- both animal and people. We also get skateboarders, paragliders, horseback riders. This area is used by so many different people for so many different uses, but we ask that you be courteous. So there is that whole yield to, yield too. So mountain bikers should give way to everybody. Everyone should give way to horses and just courtesy.

[Walking sounds]

Dr. Biology: So far it's been a really great hike because these clouds are hanging in here with us, so it hasn't gotten really warm yet. When you hike this trail in a typical day, what is the temperature like in the summertime?

Liz: I start my day at ten o'clock, and as I'm driving into work at this time of year we're already at 105 degrees. You've got to think about that when you're planning. If you decide to go out hiking at noon, you're going to be hitting the heat, 110, 111. That's really hot to be hiking.

Dr. Biology: What's the best time to come out and hike South Mountain?

Liz: I think you can hike year round. I think in the summer you want to adapt. Just like the animals adapt, you want to become crepuscular. You want to come in the very early, early morning, maybe right as the sun's coming up. Or you want to come at the end of the day right before the sun is setting. Whether or not it's cooler at night, that feeling of the sun not beating on you really saves the day.

[Walking sounds]

Dr. Biology: Now I think I know what I'm seeing here, and I'm a little bit sad. We have what would have been a great petroglyph, but it looks like we've had some damage.

Justin: Absolutely. It's real unfortunate to see. It's a large boulder about 10 feet tall by 12 feet wide, a huge boulder that was at one time completely covered on petroglyphs. Unfortunately, now we have all different kinds of tans, whites, pink, and graffiti all over it. Then we have to come over and basically paint over their graffiti or foul language, you name it, and try to preserve the petroglyphs that we can.

Unfortunately, the chemicals used to treat it or try to remove the paint will also remove that desert varnish and really take away the petroglyph or enable problems for that desert patina to continue to form on the rock.

Liz: So not only here. We're in an urban park, so we are a stone's throw away from the city, so you do get negative impacts on your mountain preserves. But we're not the only ones. It's happening in your state parks. It's happening worldwide. Graffiti is a huge problem, and like Justin was saying there's not a lot you can do. You can mask it. You can paint over it. But if you do soda blasting or sand blasting, what you're taking away is the whole rock face. With that goes your petroglyphs, your patina, your desert varnish, everything.

Dr. Biology: A 1,000-year-old beautiful piece of art and information is destroyed in just a few moments.

[Walking sounds]

Dr. Biology: Now this is something. When we talk to kids, they like to learn about poop. In this case we're going to talk about scat, is the other word for it. Right on the trail there's a story right here.

Liz: Certainly. Some people think taking their dog out on a trail and letting him to go the bathroom on the trail is the same thing as a natural animal like a coyote going to the bathroom on the trail. Totally different. If you look at this, it's comprised of mostly seeds, and a coyote's diet is mainly seeds from the mesquite tree and stuff. If they're lucky, they'll get a rabbit. If they're lucky, they'll get a lizard or maybe some other desert kangaroo rat or something. But we can see

this coyote basically had seeds for his meal. If we were to pick it apart with a stick, which I can certainly do, we're going to find out that it's pretty dry. The matter inside of it is dry.

A coyote is omnivorous, so he'll eat anything he comes across. Unlike your dog is going to eat whatever you give him, and the byproduct of his waste is mostly stuff that his body was not able to absorb. So it attracts other animals to the trail. It attracts bugs and smells bad.

Coyote waste, coyote scat, doesn't. They use everything, and only the dried up seeds and stuff is what's left.

Dr. Biology: I also notice that we have some ants down here, probably seed harvesters that are making use of the scat. So nothing goes to waste, even waste.

[Walking sounds]

Liz: Another really fun thing about going on a hike after a rainstorm, if you're going to find any tracks, you're going to find them today. You're going to find leftover footprints from the different animals that live here in the desert. So maybe if we're lucky we'll come across javelina because they live here in the park, definitely the coyote, maybe bobcat, ringtail. So you might even find a lizard or a snake path. So on a day after a rainy day, that's the day to go hiking if you want to see animal tracks.

[Walking sounds]

Dr. Biology: Hey, we've got some hikers coming along here. I'm going to get out of the way so they can get through. How are you doing this morning?

Hiker: Very good.

Dr. Biology: That's one of many groups of hikers that have come by. It's good to see it.

[Walking sounds]

Dr. Biology: [Out of breath] Well, that was a little bit of a hike there. You can get a little bit of your blood flowing, a little bit of your lungs moving in and out with that kind of a hike. Let's talk about water and these flash floods on the mountain.

Liz: Certainly, so we have the erosion that can happen. But if you look over here, you're going to see this cactus that's on its side. What happened is the rain came down in such force that it uprooted this cactus. But it gives us a glimpse of what the root system looks like. You see how shallow that root system is? Well, that's for all the plants here in the desert. They all have this very small root ball and generally one large long tap root that will go further down into the ground. So wind or a rapid-moving water source can just undercut the dirt around them and just knock them right out of the soil.

[Walking sounds]

Dr. Biology: When I look out to the west here, southwest, I'm seeing - it looks like some less-challenging trails. So are there different trail difficulties that you can take?

Liz: There definitely are. What you're seeing down there is actually the trail that we just came up on. We started off flat on the Holbert Trail, and now in the last little bit we started our incline. One other thing you're going to see that's interesting is instead of one trail directly coming to where we are now, there's a myriad of trails. Those are called social or spider trails where people have deviated and they've gone off the trail and created their own trail. This gives us such a snapshot of how unappealing it is. Can you imagine if you had vegetation in that whole area with the one trail just swatching through it versus I think I can see at least 20 trails?

[Walking sounds]

Dr. Biology: That's actually interesting. We just had some hikers go by, and they're playing their radio as they go on up there. It seems like a shame, doesn't it?

Liz: It is. There's something in leave no trace ethics called protecting the experience. When you come into an area like this, and you're coming for whatever reason, maybe it's to get away from all the hustle and bustle at home maybe to have some thoughts of your own, when other noises or other influences impact that ruins your experience. Maybe they've taken all the wildflower. Maybe the pottery shards are gone. Maybe you've run into graffiti. So what we like to say is one of the things that's a steward of coming into the park is we want you to protect or respect the experience for other people coming maybe at the same time as you or maybe after you.

Dr. Biology: In this day and age, if you want music, you can easily put on earbuds. No one's going to hear you, and you can still have your music if you want to do it.

Liz: Right, and there's actually a safety tip along with that. If you have both earbuds in, you're not going to hear the mountain biker coming down. You might not hear the warning signal of the snake either. I always suggest one earbud in, one earbud in the inside of your shirt. That's going to muffle the sound for anyone else to hear, but you're still cognizant of anyone coming behind you or any danger that might be out on the trail.

Dr. Biology: A great tip. I love it.

[Walking sounds]

Liz: This is cool what we're passing right now on the trail. Do you see this really tall green cactus just shooting up out of the desert?

Dr. Biology: Yes, yes. Actually, it must be a younger one. It has no arms.

Liz: It is. It is a saguaro cactus. When you think young, you can be up to 75 years old as a cactus without an arm. Also, it shows the nurse tree adaptation. It is growing or it started off its infancy underneath the shadow of these palo verde branches. Now it's gone up and above it, and in just a matter of time it will take away all the water resources from that palo verde. Eventually, that cactus will be standing on its own. Do you notice the pleats in the cactus and how it's like accordion-folded?

Dr. Biology: Yeah.

Liz: You can tell from a cactus when you've had rain and when you haven't had it because it'll expand. So a cactus can store water up to seven years, and it'll just get fatter and fatter. So when you see real fat cactuses in your neighbors' yards, you know they're on irrigation. When you see them in the desert, you get a real indication of what your drought situation is. You can notice in the middle there's that little bump there. So at one time there must have been, when it was growing about that height, abundant rain and it was able to expand. Then lately, you can see it's just getting narrower and narrower as it's going up.

[Walking sounds]

Dr. Biology: Now this is an older saguaro. It's got to be over 75 years old. It's got one, two, three, four, five, six arms on it, but it also looks like it's got something else going on here.

Justin: Yeah, as we can see there's a lot of basically scoops or gashes out of basically this whole side of the saguaro that's facing the trail. It's probably a 40-, 50-foot saguaro with the six large arms, and it's about eye level with us right now off the trail. So this is caused from people basically from vandalism, hiking by and throwing rocks at the saguaro, which unfortunately is going to take off that outer layer, that protection, that waxy skin that the saguaro has to protect it and keep it hydrated in the really hot summers. So not only does it look awful. It's what's going to contribute to the downfall and the death of that cactus.

Dr. Biology: When I look down just off to the side of that I see this bright blue balloon.

Liz: A lot of people will do a memorial to perhaps a loved one, maybe to commemorate a birthday of someone who has passed. They'll go up to the top of the mountain and let go a whole big swatch of balloons, and they don't quite understand that the balloons will come back down again. They won't land on a trail or into a trash can. They will land throughout the desert. Inflated not as big of a problem for wildlife, but once the balloon loses its air, it becomes an attractive nuisance. Animals will go out of their way to investigate what it is. They might try to ingest it, and they could get sick and die. A hurt, sick, or injured animal in a harsh desert environment really impacts their ability to live.

If they have to use all their resources to get over being sick, they probably won't be able to. They'll probably throw up all of the liquid that's inside of them, and they could die.

Dr. Biology: A lot of times when someone passes away they say, "In lieu of flowers you can contribute to such and such." Is there a way to contribute to the park so that they could do it that way?

Liz: Definitely. You can always donate money to the parks, and you can even specify how you'd like to see that money go. You'd like to see it on trail work. You'd like to see it on creation of new trails. You'd like to see it go into a fund to purchase additional lands to preserve them.

Dr. Biology: Well, let's continue. As a matter of fact, how far are we now?

Justin: I'd say we're about a mile from the top here.

Dr. Biology: Keep pressing on and see if we can get Dr. Biology up there.

[Walking sounds]

Dr. Biology: One of the things I'm noticing is the positioning of the Saguaro cacti. Actually, they're not everywhere. Some faces have them, some don't. I notice when I drive up to Flagstaff, for example, if you look at the mountainside, you see one side that's just covered with Saguaro and the other side it's just basically none.

Liz: Exactly. What we're looking at right now is we're facing north and so on the north facing slope we're seeing an abundance of Saguaro cactus. We're actually seeing an abundance of all kinds of plant life. Then we look over at the opposite wall, we're not seeing as much. Saguaro cacti like the north facing. They don't like that harsh sun beating on them.

[Walking sounds]

Dr. Biology: All right, we're walking. When we were talking at the beginning we said a lot of people don't realize what they're missing when they're going and hiking in the desert because they think that it doesn't have a lot of life, maybe not a lot of animals, not a lot of plants. But, the rocks here are actually lots of them that are covered with a very colorful array of not a plant, but what we call lichens. Justin, tell us a little more about those.

Justin: Lichens really are a composite organism of a fungus and algae and their nice symbiotic relationship. That's where we see these large splashes of color, as you said, greens, yellows, reds, oranges that just pop in the desert and grow right alongside the desert like varnish on these boulders.

Dr. Biology: One of the things they've studied is the lichens are found everywhere, even in the arctic. It turns out that they can actually be dried for hundreds of years and in the right conditions they can come back to life. This is really one of these plants that you see all over the world.

Justin: Absolutely. In the harshest climates they seem to thrive.

[Walking sounds]

Dr. Biology: [Out of breath] Here we go again. We're going to make the last push. One of the questions I have since we started at 6:00 AM and we got the beauty of this cloud cover. The thing that would have changed this is if the sun had been out. Can you start any earlier? What are the hours?

Liz: Definitely. You can start as early as 5:00 AM. The gates will start opening then and you can drive your vehicle in and park it in any of the trail heads. If the sun isn't up, we do recommend bringing a head lamp or something like that so you illuminate the trail. Conversely, you can stay all the way up to 11:00 at night.

Dr. Biology: Are there rangers here that whole time?

Liz: No. Rangers close all the gates to the parks at 7:00 at night, so after 7:00 if you're not inside the park, you have to walk in or bike in. Ranger staff leaves at 8:30 PM. If you were to run into some kind of an issue, your best bet is to call 911.

Justin: That's a good point if you're going to be hiking around here, especially if you don't know what you're doing around here, make sure that you do it when the rangers are going to be around. Even if you are around, 911 is probably the first thing you're going to want to do anyway because they're not going to be able to hear you. You can be up here, you can be screaming and they're not going to hear you clear down in the valley.

Liz: Right, 911 will get a message out to everybody in the park so we can get to you as fast as possible.

Dr. Biology: Be safe when you do this. Certainly come up, bring the water and think of how you can be treading lightly on the environment in multiple ways. Also, make sure that you leave it a little bit better than you found it. If you find a piece of trash, pick it up and carry it down. Just because someone else was too lazy to do it doesn't mean you have to be. You can actually be a good steward of this wonderful environment.

[Walking sounds]

Dr. Biology: We're at the top of Holbert Trail and the view is worth the two and a half mile hike. The clouds stayed with us and I can see some rain clouds out in the distance. They look pretty ominous, which reminds me it's a good idea to bring a poncho or raincoat as part of your hiking gear. Right now I want to thank my fantastic guides, Liz Smith...

Liz: Thank you for coming. It was a great day.

Dr. Biology: ...and Justin Olson.

Justin: I had a wonderful time with you today.

Dr. Biology: You've been listening to "Ask-a-Biologist" and my guests have been Phoenix Park rangers Liz Smith and Justin Olson. The "Ask-a-Biologist" podcast is produced on the campus of Arizona State University. Today it's been recorded live at South Mountain Park. The program is part of the School of Life Sciences which is an academic unit of the College of Liberal Arts and Sciences.

And, remember, even though our program is not broadcast live, you can still send us your questions about biology using the companion website. The address is askabiologist.asu.edu, or you can just Google the words "Ask A Biologist." I'm Dr. Biology.