

Diana Northup

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BIO

Diana Northup, a West Virginia native, starting caving in college when she was 18 years old (1966). Northup explored different kinds of caves in West Virginia—ones with rivers, deep ones, and shallow, short, long, wet, cold caves. In the beginning, Northup liked the adventure of exploring caves, but the more she explored, the more she wondered how anything could live in a cave. However, she did not start researching caves for many years.

In 1981 Northup went back to college and starting her cave research. Currently Northup researches phylogenetic trees—it is like a family tree for bacteria. This means that she uses the newest engineering methods to discover the “family” relationship between different types of bacteria. This helps scientists understand how life evolved on Earth. Northup grows cave bacteria in a laboratory. This is a very hard to do because the bacteria cannot tell her what it likes to eat and how it likes to live. It is difficult to replicate a bacteria’s natural environment!!

Northup loves caves, “I consider it my passion. It’s more than a job...it’s like there’s almost a gene for the love of caves. I’ve interviewed people who wondered around forests looking for caves – a place where there were no caves.”

Northup is also very serious about caves. She believes that caves are very sensitive environments, “Our mere presence affects the cave.” She believes in the National Speleological (Cave) Society Motto: “Take nothing but pictures, kill nothing but time, leave nothing but well placed footsteps.” Northup says that you must respect the life that’s there, have fun and really look at the cave, but don’t run all over them. Also, the park officials will ensure that *if* you don’t respect the rules, you will not go back. Please be careful and thoughtful!

Here’ some advice from Northup for future cavers:

“The best part of caves is the mystery. Discovery on your own. Walk where other people have walked because you may break something. Some things are hard to see and you won’t know it’s there until your foot comes down on it. Pay attention to where you put your feet.”

Q&A

Q: What caves do you work in? Are they solely in New Mexico?

A: I do most of my work in New Mexico. I work in Lechuguilla, Carlsbad, and Spider Cave. Occasionally others, but those are the three main ones. Then I work in the Lava tubes, west of here, near Grants. They are some wonderful Lava Tubes. They have some bacteria called *itinomiosis*. They are a bacteria that give caves their musty odors. It is also a family where we get a lot of our antibiotics. So we're interested in some of the bacteria that live there. Then I work in Mexico in Cueva del Villa luz, which is in the state of Tabasco. I work with a biologist down there who's really interested in the cave. We do a lot of photographing and provide him with information that he can use to interpret the cave for people."

Q: To you, what is a caver?

A: "Crazy. The people that I've know over the years tend to be somewhat eccentric. They call themselves *cavers*, not spelunkers – it's almost a reverse snobbism. The cavers that I know tend to be earthy people, although there are a few sophisticates, but they tend to wear older clothes and somewhat crude. And they just enjoy something like caves. I know one guy who loves to spend days at a time underground. He says that it's a much calmer place for him, too many people up top. He can be quiet and sane underground. They like getting dirty obviously, but I love showers. Cavers are just different. They just tend to be more down to earth and their not solely republican or democrats – there are political opposites, extremes. They just enjoy being under the ground."

Q: Are they (cavers) mostly scientists?

A: "No. Most of the cavers I know are not scientists, but they're interested in science." Some may not study caves per say, but are teachers, I know one witch, most come from science related fields, actually we have a fairly strong number of engineers."

Q: Some of the caves are open to the public and some are not?

A: "Correct."

Q: You have a certain amount of access because you are a scientist and you conduct research?

A: "Right. That gets you into some caves that are off limits to other people, but only if you respect the rules in the caves."

Diana's Rules:

1. We won't leave our scientific apparatus lying around.
2. If we have to go off trail, we will do so carefully and we will brush out our footsteps so that people don't know that somebody has been off trail.
3. We will be courteous to park visitors and explain what we're doing, but not bore them to tears with too much science.
4. We won't break things.
5. We are careful of the cave environment – we are good conservationists.

Q: How should kids study caves?

A: "Sit in the dark and listen to the cave and just hear the silence, hear the water dripping, you might hear something moving around. One of the most amazing things about caves to me is just how profoundly dark and quiet they are. As they move through the cave, the tendency for anybody, whether they are a kid or an adult, is to race through the cave, but if they can restrain themselves and do it as almost a hide and seek game – Can you spot the critter because cave critters are really secretive and are really hard to spot so it's almost like a game – can you see what lives in the cave? And feel the surfaces so as you clamor over the rocks, feel what the rock feels like, sometimes it's smooth, sometimes it's rough, sometimes it is slimy so use all your senses."

Q: Which cave is the best for kids to go to?

A: "The lava tubes are pretty cool because you have to climb down into them so it is a real challenge – you're clamoring over all the rocks and stuff – you can get the total darkness. There is a hint of danger because you can fall, you can break an ankle, split open your head so you have to be careful – it is a challenge. Going to Carlsbad is a good one. They have some wild cave tours."

Q: What is your ultimate goal?

A: "Actually understanding them and how life interacts with caves is important to me. I want to understand how something you can't see produces these wonderful monuments that we all think is just gorgeous. I am convinced that there are microbes involved in many, many of the aspects of caves and their decorations from how that caves are formed to how they're decorated and that is what I want to understand."

Uniform:

1. Respirators that are specifically targeted to scavenge hydrogen sulfide and we take a four gas monitor so that if we get a big belch of carbon monoxide then we leave the area b/c our respirator does not protect us

- from that or if the oxygen level really drops then we can leave that area and it does explosive gases.
2. If caves are dangerous, like some in Mexico, we take oxygen and other objects to protect us.
 3. Occasionally we take science equipment to protect microbes from us – like white suits, a facemask, a hair net, booties. For example, in a cave like Lechuguilla, we take gallon bags to eat over. We take toilet kits so that we can remove our waste products. We make sure that our clothes and boots are clean. Gloves, aqua socks, non-scuff boots.
 4. If I am going into a vertical cave, I prepare myself mentally and physically. I workout and I also go and practice rope techniques so that it won't be a shock.
 5. You need to know how cold a cave is. What the temperature a cave.
 6. If you're going to eat, eat over a bag because what is a crumb to you is a whole supermarket to a microbe.

Q: What is the coolest thing in a cave?

A: "Snottites and phlegm balls. The eyeless and translucent things – troglobite."