Clifford N. Dahm

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BIO

SLIME team member Clifford Dahm is an Aquatic Ecologist and professor (Biology) at the University of New Mexico. Diana Northup, SLIME team member, got Dahm involved in cave research. Dahm assists the group with some of the microbial ecology components.

Dahm has a great, adventurous job. He has been to the bottom of the ocean, to the top of Antarctica, and into the depths of caves. He is very athletic—handball is his favorite sport. He also runs, skis, and mountain-bikes. Although he loves adventure, he doesn't like the heights in some caves, like Lechuguilla.

Dahm thought Lechuguilla was the most beautiful cave, but the most difficult because it is so deep. There were times when his hat light would not reach the bottom of the cave because the cave was so deep. Thankfully he trained for this quest.

Dahm noticed a lot of different things once on the ground in Lechuguilla. There were large boulders, he had to crawl through narrow pathways, and walk along narrow paths with no safety holds—one trail only had a wall on one side and the other side was a cliff that went a long way down—then there were sharp, cutting gypsum crystals. It is also totally black except for the hat light.

Despite the rough environment in Lechuguilla, Dahm says that being there allows them (scientists) to study areas where, probably, no humans have ever studied. The microbial community and environmental conditions that are there are pretty untouched by human activities. Caves are truly special places!

Dahm offers advice to future cavers: "Treat the caves delicately. Also, if you are going into the caves you need to understand that it is physically rigorous work and you need to be in good physical condition to be ready for the rigors of the trip. So you need not only to understand the equipment, but also be physically up to the kind of grueling effort that you're going to have to put out to spend a few days in such a cave. So as long as you're mentally ready and physically ready and knowledgeable about the equipment and the environment."

Q&A

Q: In terms of research, how are caves different from other environments in which you work?

A: Well, the cave environments are a mixture of both aquatic environments and basically humid terrestrial environments—they have100% humidity in the caves so everything's moist. But, they are not saturated like some of the pools, for example, we've done work on some of the organisms in some of the aquatic environment we work in, but a lot of what we're looking at are organisms that are in some of the habitats are forming on the walls, on the ceilings or secondary minerals that are forming in the air.

Q: What roles do caves serve as a research lab?

A: Well, there's a variety of research on caves getting a lot of interest. There are a lot of organisms that are novel because of the challenging but homogeneous environments that you find in caves. Secondly there is the issue of getting at organisms that live in the subsurface. It's clear now that the Earth is well populated with micro-organisms down to many kilometers deep everywhere in the Earth's surface, so caves provide an accessible window to actually get to some of these organisms that are in the subsurface. There is a reasonable belief that subsurface environments are the most likely analog to life on other planetary bodies in our solar system. If there is any life, it's not likely to be at the surface because of the hostile environments. Subsurface environments become a potential alternative to understanding how life functions in subsurface environments on Earth [and] might help us [in] trying to assess whether similar kinds of processes and activities exist in other environments like Jupiter, Mars, or places like that.

Q: Do you currently work in caves?

A: I work in caves. I have been in Spider and Lechuguilla cave. I help a little bit, mostly with the ideas and some of the methodology applied and I will possibly make some additional trips back, but I play a fairly minor work in terms of the actual fieldwork. There are others in the group that are much more adept cavers than I am.

Q: Do you enjoy being in the caves?

A: I'm not particularly good at vertical rope work and can't say that I really like heights. I have been in other environments that I prefer.

Q: Would you take your children into the caves?

A: As long as their trained on the equipment and kinds of safety issues required I have no problem taking them (daughters) along into the caves.

Q: How else would you prepare your child regarding the fragile environment inside of caves?

A: Treat the caves delicately. Also, if you are going into the caves you need to understand that it is physically rigorous work and you need to be in good physical condition to be ready for the rigors of the trip. So you need not only to understand the equipment, but also be physically up to the kind of grueling effort that you're going to have to put out to spend a few days in such a cave. So as long as you're mentally ready and physically ready and knowledgeable about the equipment and the environment.

Q: How did you get started caving?

A: Through Diana Northup. She arranged for limited training on vertical ropes so I had a limited amount of experience with that, but I had never done any kind of cave exploration until she wanted to know if I'd like to see some of the habitats where she was doing her PhD. She arranged for us to go into both Lechuguilla cave on a two-day trip and then Spider cave, which is a challenging and technically less difficult cave that you can visit in a day.

Q: Do you have a favorite [cave]?

A: Lechuguilla is the most spectacular cave probably in just about anywhere in the world. It's a multi-day trip. We explored about a tenth of the interesting parts in Lechuguilla in a 2-day trip. To see the major areas that have been mapped you're usually talking about 4 to 6 days. You really want to have the time to access a number of these sights and depending on what you want to do you also have to have the equipment to do that. You're bringing a significant amount of gear. You have to have people to assist you because you'll not be able to carry all that material yourself. That's why the group uses a number of experienced cave explorers that are part of the local speleological community that have been very, very helpful. We've had a lot of assistance from some very talented cavers. [Note: Access to Lechuguilla Cave is now more restricted and those wishing to go there must submit a work proposal to the National Park Service, detailing what they wish to do, their skills to do it, and what the Park Service will gain from their doing this work.]

Q: Have you ever experienced anything dangerous [in the caves]?

A: No. There were six of us on the trip I went on. Three of us with limited experience and three very experienced cavers. The three experienced made sure we didn't do anything stupid, but at the same time you realize that there is an element of risk when you're in an environment like that. One of the less experienced cavers did sprain an ankle so we did have to work him out gently because he was not walking very well. I've been in

other extreme environments. I've been to Antarctica, I've been on the bottom of the ocean and I've had some experience in hostile environments. I've spent time in the high country, done a lot of backpacking and cross-country skiing and downhill skiing. So I don't have a problem with the environments. The only thing that bothered me about the caves is that I'm not really fond of heights. What I found is because you're always adrenalized and your adrenaline is pumping, and you're doing this for hours on end, you tend to exhaust yourself quite a bit. Just physically being on this high level tension, constantly. That is one thing that I had not experienced before, being adrenalized for this extended period of time and physically exhausted.

Q: What are your favorite sports?
A: Handball is my favorite sport. I run, ski, and mountain-bike.

Q: Have you ever seen anything cool inside of caves?
A: The beautiful colors of all of the minerals inside of all of the caves are spectacular. The Chandelier Ballroom in Lechuguilla is the most dramatic. It has massive draperies made of crystals.