



Klocker, Lambert and Garlock dive underwater, while Lillestolen is on the portledge and Elor is on the ropes.

Text by Andreas Klocker and Steve Lambert
Photos by Adam Haydock and Teddy Garlock

What a resurgence! I first saw this amazing resurgence in 2017. Fellow explorer Zeb Lilly and I had organized an expedition to the Huautla Resurgence that year, and, after we finished our expedition, drove towards the town of Huautla to help out on the American PESH (Proyecto Espeleológico Sistema Huautla) expedition, which focused on exploring the upper dry parts of Sistema Huautla that were the source of water emerging at the Huautla Resurgence.

Together with Katie Graham and Gilly Elor, we made use of some spare time we had and took the scenic tour to Huautla along the slopes of the picturesque Santo Domingo Canyon, home to several of the world's deepest and longest cave systems (Sistema Huautla, Sistema Cheve and possibly multiple large systems under the Cerro Rabón).

About an hour before reaching the town of Huautla, we made our last stop at the Río Uluapan resurgence, which we had heard of. The only map which



Land of the Sumps

— Cave Exploration in the Cerro Rabón

ADAM HAYDOCK

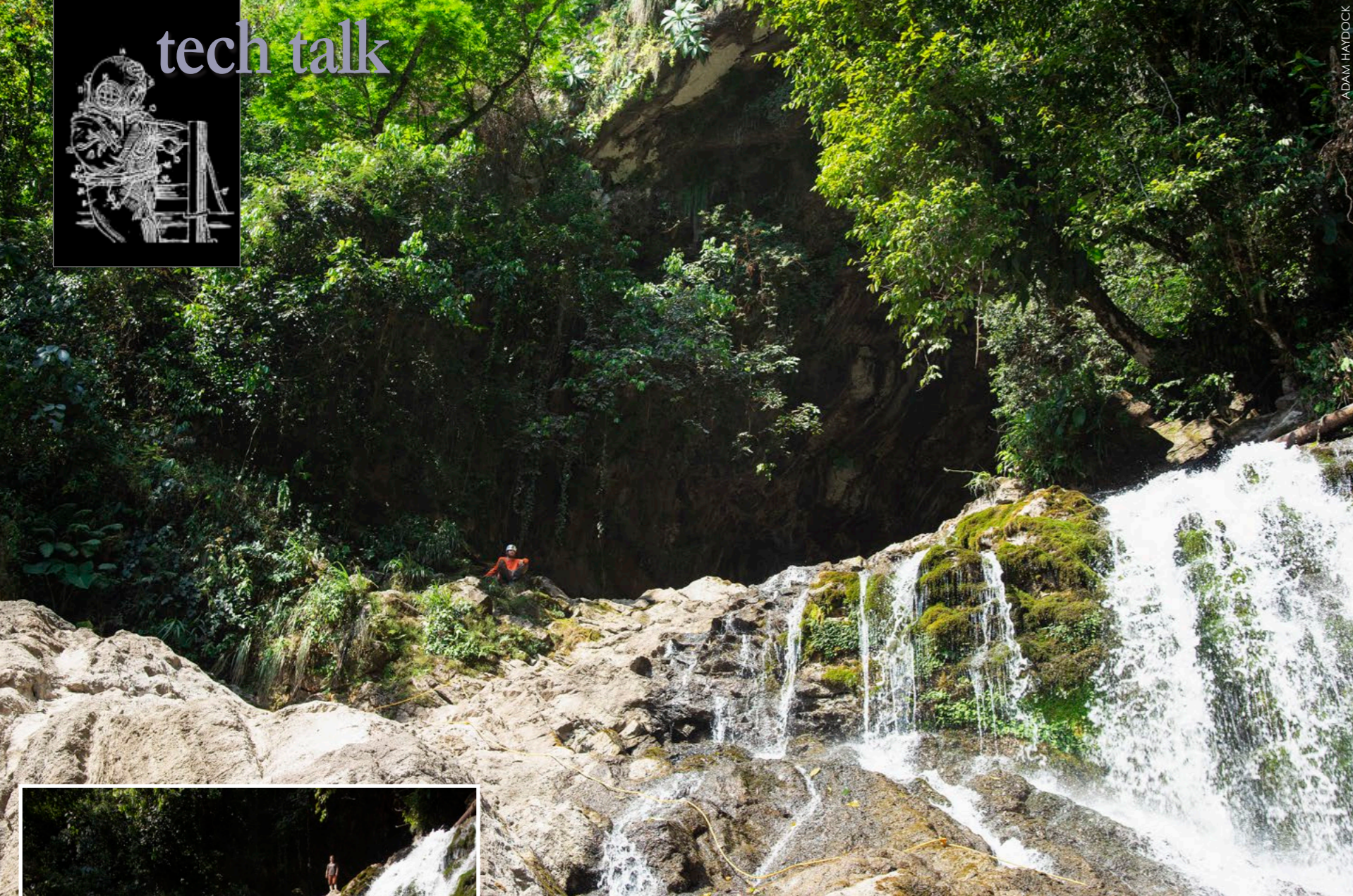
existed showed a sump pool a few tens of metres into the cave, with the size of an Olympic swimming pool. The very limited reports that existed mentioned a tunnel of 40m diameter and crystal clear water. Only one diver, American cave

explorer Bill Farr, ever made it through Sump 1, reporting a 14m high waterfall on the other side. Due to the complicated nature of access to this cave, nobody had ever returned since.

The following season, in 2018, our goal was to push a cave known as the Cueva de la Peña Colorada, which has been hypothesized to connect into Sistema Huautla. After a year of intense planning, we spent eight weeks in the field, with 24

cave explorers, to push the seventh sump in this cave, five kilometers into the mountain, only to find that the way on was blocked by a rock fall 20m beyond the previous exploration. And to top things off, on the return from Sump 7 after the final





ADAM HAYDOCK

Lambert at the entrance to the resurgence (left) and hiking across the waterfalls cascading from the cave (lower left)

Cerro Rabón

cave explorer Bill Stone was on the US federal team of structural engineers sent to evaluate the effects. Following a grim week seeing first hand what designs worked and what did not (with tragic human consequence), he and Angel Soto (a member of the 1984 Peña Colorada team²) went to Huautla to attempt to resolve some political problems that had arisen that spring. While there, they discussed the possibility of diving the Uluapan.

The following year, they drove to Ayautla, the closest town to the Uluapan resurgence. The bridge to Ayautla was completely destroyed by the summer floods, which issued from the Uluapan resurgence. The flow was still enormous, but no longer zero viz brown. A makeshift pedestrian crossing had been erected, and Stone used that to hike up to Ayautla from the bridge. In the meantime, the others had to return to their businesses in Mexico City, leaving Noel Sloan and Stone on their own.

Stone recalls:

“We spent the entire next day chopping a steep trail up the left side of the raging arroyo leading up to the entrance. The water coming out the entrance was frightening. I still remember taking a photo of Noel standing beside it. The water flying over the travertine falls was deeper than Noel was tall and it arced out a good 20m before disappearing in a cloud of impact-induced spray and fog. We seriously considered aborting right then. But further investiga-

tion showed that the breakdown on the floor of the entrance chamber right there at the entrance was diffusing the flow—enough so that despite that ferocious waterfall just meters away, the deep, dark, long lagoon leading back into the mountain was tranquil, still.

“The following day, using 1984 Peña Colorada diving kit (S-glass composite tanks, Y-valves and specially modified Sherwood regulators that handled 5,500 psi) borrowed from Zambrano, Sloan and I suited up while the four Sherpas watched on. It has been 33 years since that day, but I still remem-



The resurgence in 1986, when Bill Stone and Noel Sloan explored the cave

push, six of us got flooded into the cave and spent 69 hours in our wetsuits, with four muesli bars and a space blanket, before managing to escape once the water levels had receded enough.¹

Needless to say, morale was low, and after we recovered from this epic, we were desperate for some successful exploration on our next expedition. And what better option than the Río Uluapan? It had the largest flow of water emerging from all of the nearby resurgences, with the source of the water being unknown. We knew that our team had the perfect skills to deal with a waterfall beyond a sump and continue exploration.

¹ [HTTPS://WWW.SIDETRACKED.COM/CUEVA-DE-LA-PENA-COLORADA/](https://www.sidetracked.com/cueva-de-la-pena-colorada/)

A bit of history

It was not until the late '60s or early '70s that the existence of the Uluapan resurgence was brought to the attention of cavers (Kambesis, 2003). It was a team of Canadian cavers who noted the spring during one of their reconnaissance trips (Shawcross, 1970). In the early '80s, Huautla cavers were on the lookout for springs that would help them determine the depth potential of Sistema Huautla, and deemed it possible, though not probable, that this was the resurgence to Sistema Huautla.

It was not until 1986 that the Uluapan resurgence was first dived. The roots of this trip started in September 1985, when a magnitude 8.5 earthquake devastated large areas of Mexico City. American

² [HTTPS://WWW.BEYONDTHEPUMP.ORG/84-PENA-COLORADA/](https://www.beyondthesump.org/84-pena-colorada/); [HTTP://WWW.USDCT.ORG/PENA_COLORADA84.PHP](http://www.usdct.org/pena_colorada84.php)



ADAM HAYDOCK

THIS PAGE: The team organizes and transports climbing, rigging and technical diving gear through a 500m sump.

This exploration then remained a secret amongst a few of them until 1994, during the famous and tragic San Agustin expedition, when Stone and Barbara am Ende discovered Sump 9, now known as "The Mother of all Sumps," in Sistema Huautla.³

At that time, Stone gave a full debriefing on what they had done, to cave divers Tom Morris and Jim Brown. They readily expressed interest and, in the spring of 1995, returned with Paul Smith and Bill Farr. Only Brown and Farr dived; Brown essentially reached the limit of exploration set by Sloan and Stone. Farr then ostensibly reached a point 430m

³ [HTTPS://WWW.BEYONDTHE SUMP.ORG/94-SAN-AGUSTIN;](https://www.beyondthesump.org/94-san-agustin/)
[HTTP://WWW.USDC T.ORG/HUAUTLA94.PHP](http://www.usdct.org/HUAUTLA94.PHP)

from the end of the entrance pool where he surfaced to conditions that have either been garbled or intentionally obfuscated. This was the last time anyone had dived this sump until 2019.

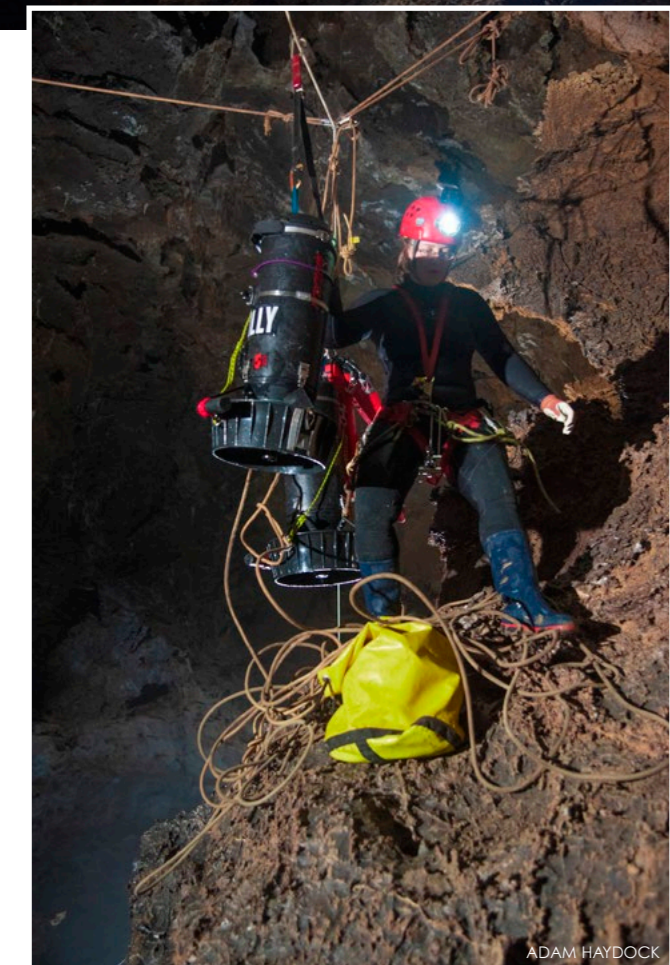
Gear

According to the information we had gathered about the cave from the previous exploration teams, our expedition was going to face some serious challenges. Not only did we need to be prepared for both deep technical diving and technical climbing in a remote area, we also had to transport the climbing and rigging gear through a 500m sump. Each of these tasks required specialized gear that is unavailable

Cerro Rabón

within any reasonable distance of our project. Any piece of gear that we were lacking could take days or potentially weeks to drive on location, therefore we had to be extremely thorough in evaluating our needs for the project. We were also limited to two vehicles to carry our equipment from the US East Coast where it was stored to the Río Uluapan, which further complicated the task of preparation.

After a thorough evaluation of what we needed for the project, the team created detailed checklists for all of the supplies and equipment that we would need for our month-long expedition, including all gear necessary for exploration, the spare parts



ADAM HAYDOCK

Elor handling gear between sumps

ber the exchange I had with Noel before entering the water. He gestured with his arm towards the back of the blue-black lagoon and began nodding. Then he looked at me and said, 'Have you ever seen the movie *Caltiki—The Immortal Monster?*'

"I looked at him, and off towards the back of the lagoon, then back at him and said, 'Unfortunately, yes. Why the hell did you have to bring that up?' It was a spooky place.

"We inflated our BCs and swam as far as we could into the entrance chamber lagoon, to where it takes a westward jog. We tied off there and sub-

merged. Each of us had two back-mounted, 9-liter tanks at 5,500 psi (air), so we were somewhat limited in what we could do. We did, however, have a lot of line with us.

"We stayed on the right wall at roof level, trying to keep as high as possible. We had pretty good primary cave lights, but probably nowhere near as tight and powerful as what we have today. Nonetheless, we spotted what appeared to be sculpted sand on the bottom, perhaps 30m below. The left wall was out of sight in the blackness. I remember the right wall being stratified and curving upwards. We tied off at 280m penetration when we hit thirds on our gas supply. We had no backup whatsoever so we were playing it conservative."



ADAM HAYDOCK

Lillestolen looking down on the tyrolean above Sump 1





Lilly making a plan as team members check to make sure they have all the correct supplies and gear to safely complete the tasks ahead (below); Garlock and Lilly ready to dive Sump 2 (right)



necessary for its maintenance, as well as supplies for daily life at base camp and any emergencies we might encounter. In the days and weeks leading up to the expedition, Zeb Lilly and other members of the team carefully went through the checklists, making sure we would have the correct supplies to complete our task safely.

Technical diving is an equipment-intensive pursuit, and the possibility of the cave going deep only added to the gear list. Because of the remoteness and depth of the cave, we chose to use

closed circuit rebreathers, which would allow us to go farther with less gear, minimizing compressor use and saving us from frequent trips carrying heavy gas tanks up and down the mountain.

We brought multiple sets of almost every tank size available, so we would be prepared for any environment we could meet, as well as three "T-Bottles" for storing the large amount of oxygen and



trimix we expected to use. We had a gasoline-powered compressor we used to fill air tanks, in addition to running our gas booster used to compress the different gas mixes we would need for deep dives.

Aside from all of the gasses, we brought several tubs of CO₂ absorbent used for running our rebreathers. We had three Submersion Minnus DPVs (Diver Propulsion Vehicles), which were necessary for hauling gear between the cave entrance and the dry passage between sumps, and added a greater safety margin on deep dives. Each individual brought their own personal dive gear, including their rebreather, drysuit, undergarments, suit heaters, regulators, masks, fins, wetnotes, dive computers, multiple dive lights and helmets.

Besides diving, we had to prepare to safely climb to the cave entrance, and to climb up what we expected to be a 14m waterfall after Sump 1. We also needed to be prepared for any additional climbing problems we may encounter in further exploration of the cave. We packed hundreds of bolts for climbing and rigging, hundreds of meters of static caving rope, electric drills and bits, and two portable ledges that could be hung up to assist divers getting out of the water, preparing to climb, and to rest before climbing after a long dive.

In case of an emergency, we brought a rigid stretcher, which could be used to evacuate someone from the cave and back down the mountain. We had an adequate supply of oxygen in case of

a diving incident, first aid supplies and emergency medicine and several satellite communication devices able to reach outside help. In addition to equipment and supplies, several members of the team were trained and highly experienced in emergency first aid and rescue.

A long way from home

A majority of the team departed from the US East Coast. Charlie drove his cave van from Florida with Gilly, and helped carry a majority of the individual dive gear. Zeb, Teddy, Steve and I (Andreas) took the expedition truck, an F350 with a camper shell and full roof rack, which carried all of the team supplies, overloaded with what we estimated to be over two tons of equipment. We picked up Joe in the expedition truck midway

Lillestolen working between the sumps

ADAM HAYDOCK

ADAM HAYDOCK



THIS PAGE: Elor climbs over Victoria Falls, which drops into Sump 1, in which Lillestolen is diving

through the United States. It took a total of four days of driving to arrive at the Uluapan resurgence—two in the United States and two in Mexico.

We were lucky to have no issues with the vehicles during the drive there, and the border crossing went smoothly, with the only hiccup being trying to understand

the process of paying an import tax on the compressor, and how much that tax should be. After crossing the border, we registered the vehicles and had no further issues on the drive. Other members of the team including Alejandra Mendoza, Jon Lillestolen and Adam met the team directly at the Uluapan resurgence.

The search for the elusive waterfall chamber

Since divers found the waterfall chamber at the other end of Sump 1 in only two dives in 1995, using open-circuit dive gear and old-school torches, we thought we would be able to find this place again very quickly using rebreathers and state-of-the-art dive lights. Nevertheless, in the end, it took four dives—maybe because our great lights showed us too many possible ways to head. We also started early to survey Sump 1 in the hope that the survey would give us a clue as to where the continuation of the cave might be. But finally, it was on the fourth dive that we were successful.

Steve Lambert gave the following account about finding the waterfall:

“Team Steady (Steve and Teddy) had failed on our first attempt at the sump, and although we had put in 500m of line down that dive, we were pretty bummed that we hadn’t made a glorious return full of stories telling of an incredible waterfall and a cavernous room crashing with waves caused by a hundred-foot cascade. Bill Farr, the original explorer of Sump 1, had managed to find it on the first try, using an archaic open-circuit kit. Not only had we not found the waterfall, going through oxygen unexpectedly fast while bobbing up and down to check air pockets, had forced us to turn early

and shamefully commit the cardinal sin of exploration, coming back without survey data.

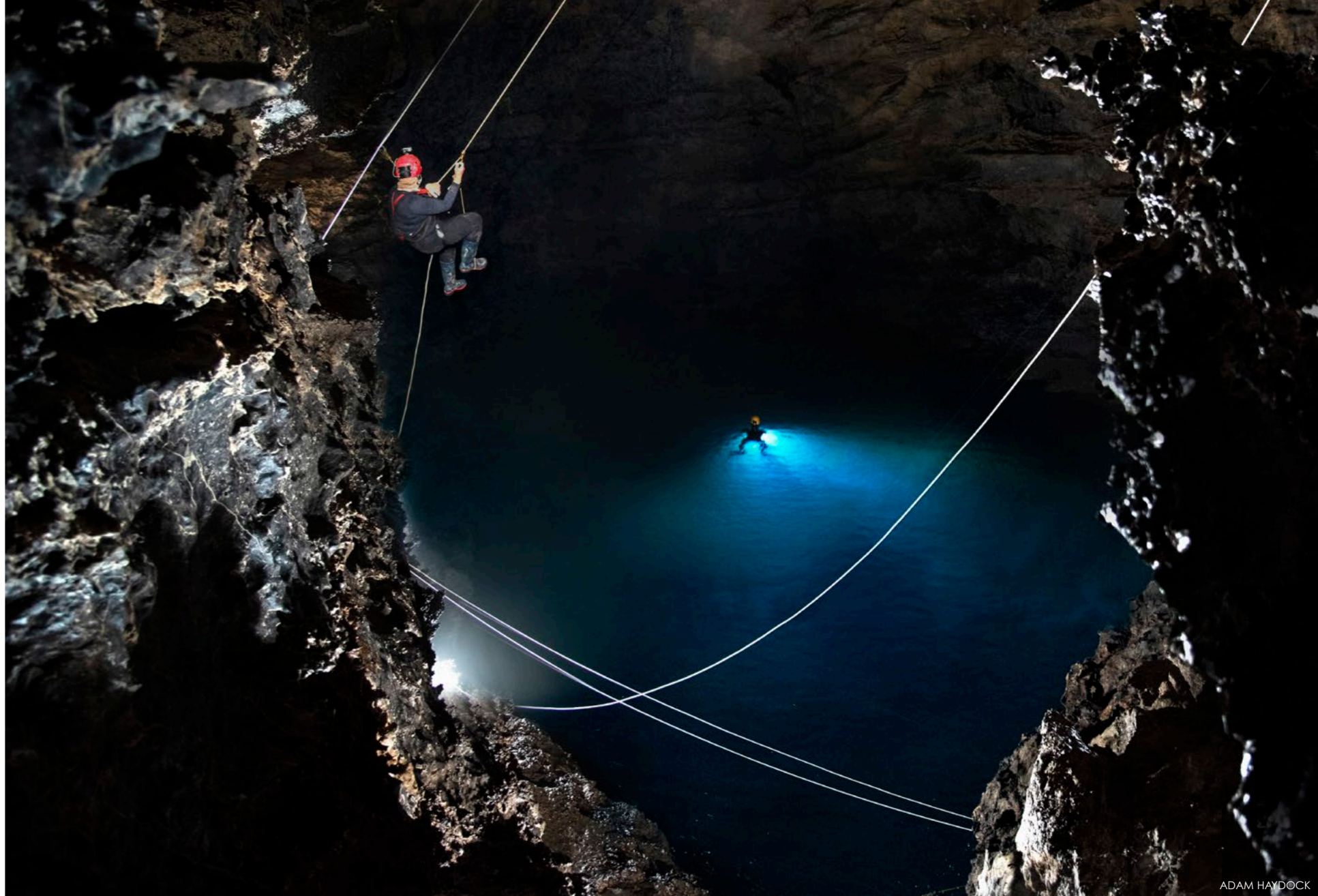
“Once the others in our team had all had a crack at it, Team Steady once again trudged up the mountain, with unprecedented levels of stoke and determination to claim the waterfall. The main objective of our dive was to survey the ‘big room’ that we had been in on our first dive, so the team could get a better understanding of how the cave was shaped and where we should be looking for going passage. After going through all of the safety checks and donning our KISS Sidewinder rebreathers, we headed off, following the line back to the big

room. We began to survey, starting from the end of survey marker left by Zeb and Charlie Roberson, but quickly realized it would be more efficient if one person surveyed while the other explored. I left Teddy to work on the survey and headed off to take a preliminary circle around the biggest cave passage I’d ever seen.

“Teddy was reluctant to abandon his work, having just gotten into the survey groove and not wanting to once again end the dive without having collected any data. I persisted, and finally he agreed to come have a look. We swam back to my cookie, and Teddy could also hear the faint rumble. At this point, we began to get

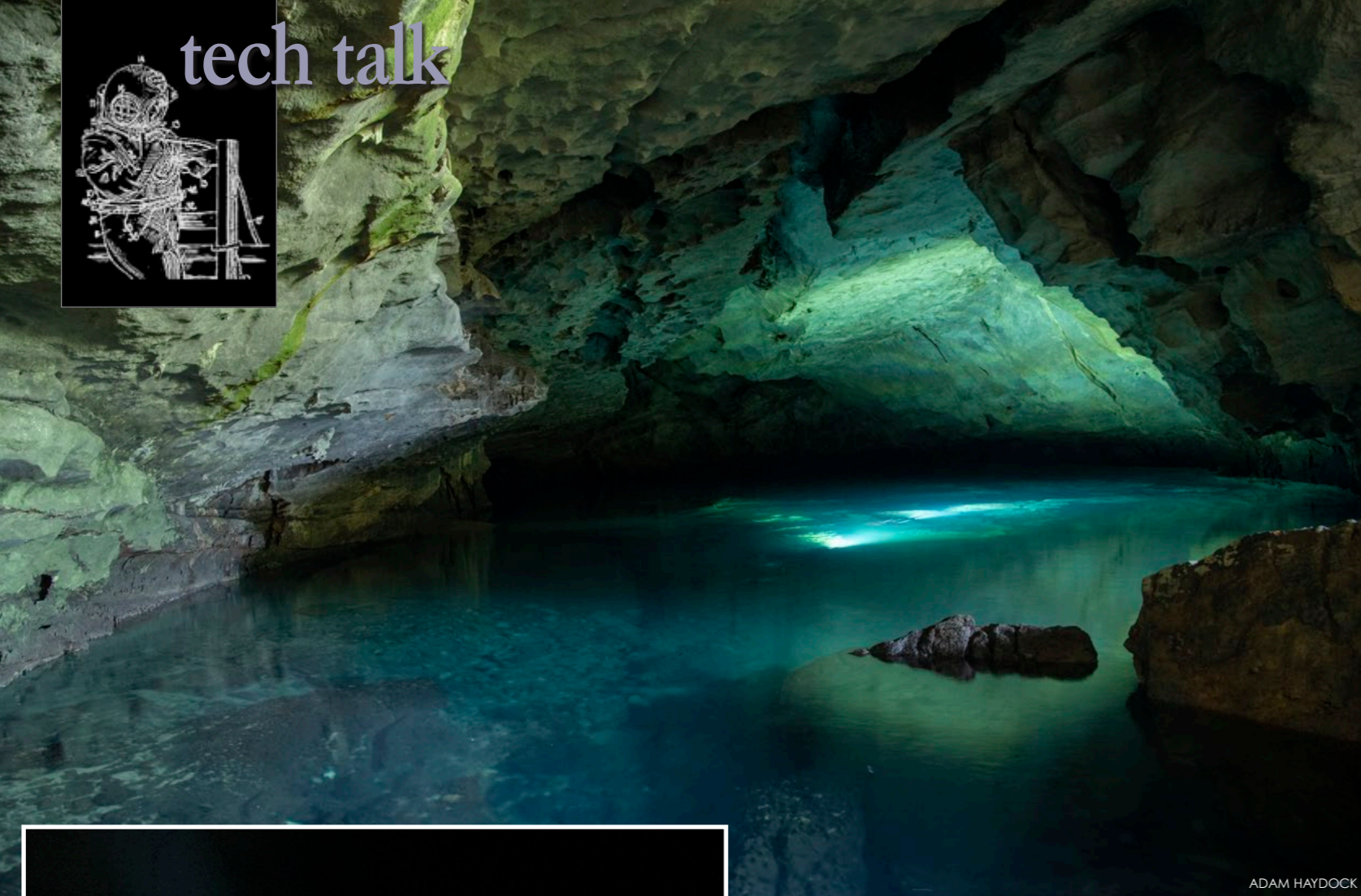
excited, and the more we swam in that direction, the more excited we were. We swam staring at the ceiling of the cave, wondering where the sound could be coming from, as we were surrounded by solid rock in all directions.

“All of a sudden, when we were at the northeast end of the big room, the stone ceiling dropped away and turned to blackness. We tied off another line and headed up from a depth of 70ft. It took all of my self control to stay at a safe ascent rate, knowing what we had put all that effort into looking for was right above our heads.

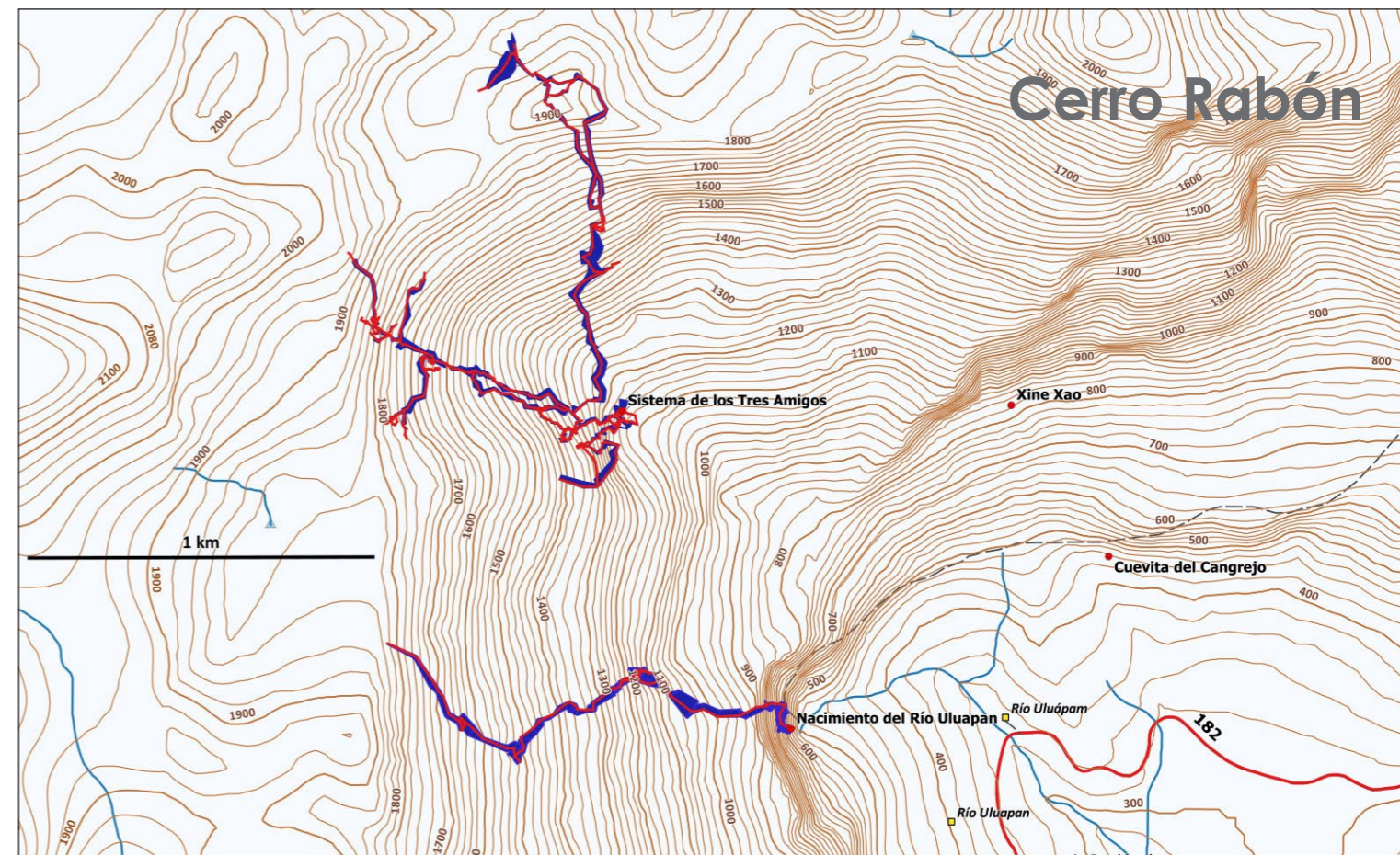


ADAM HAYDOCK

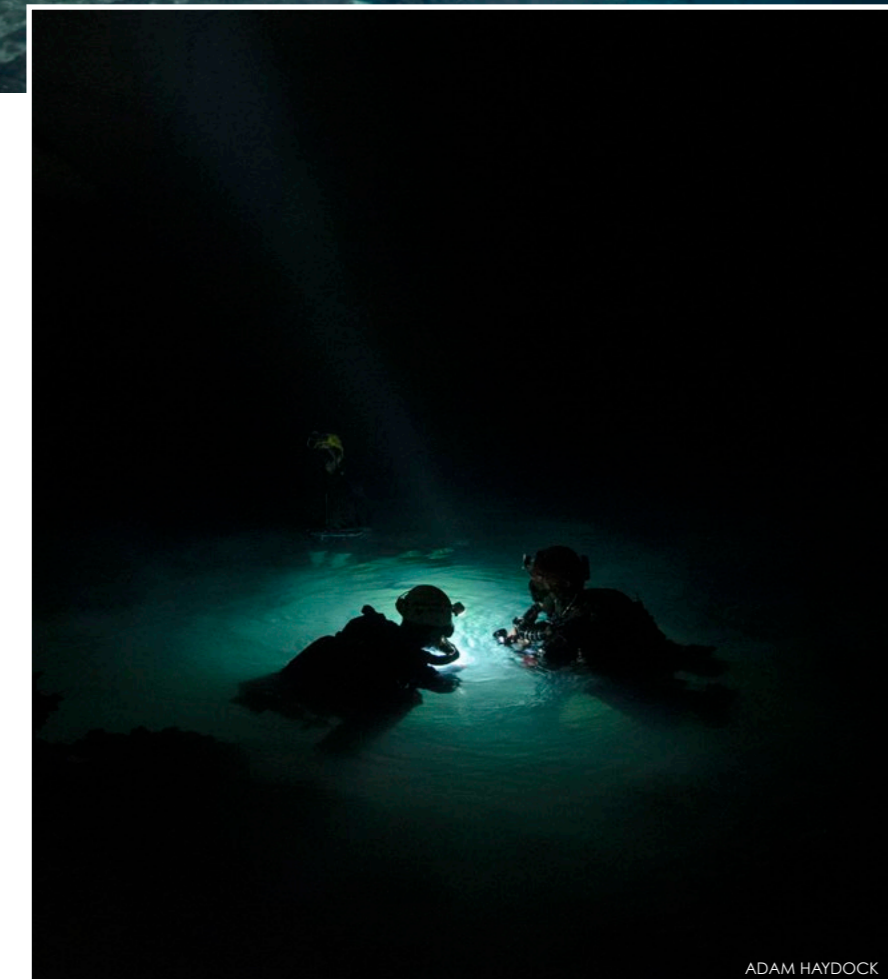
ADAM HAYDOCK



ADAM HAYDOCK



Map of Uluapan's Three Amigos Area QGIS 10 (above); Divers leaving the sump pool just inside the entrance, which is about the size of an Olympic swimming pool (left); Divers returning from a dive in the cave (below)



ADAM HAYDOCK

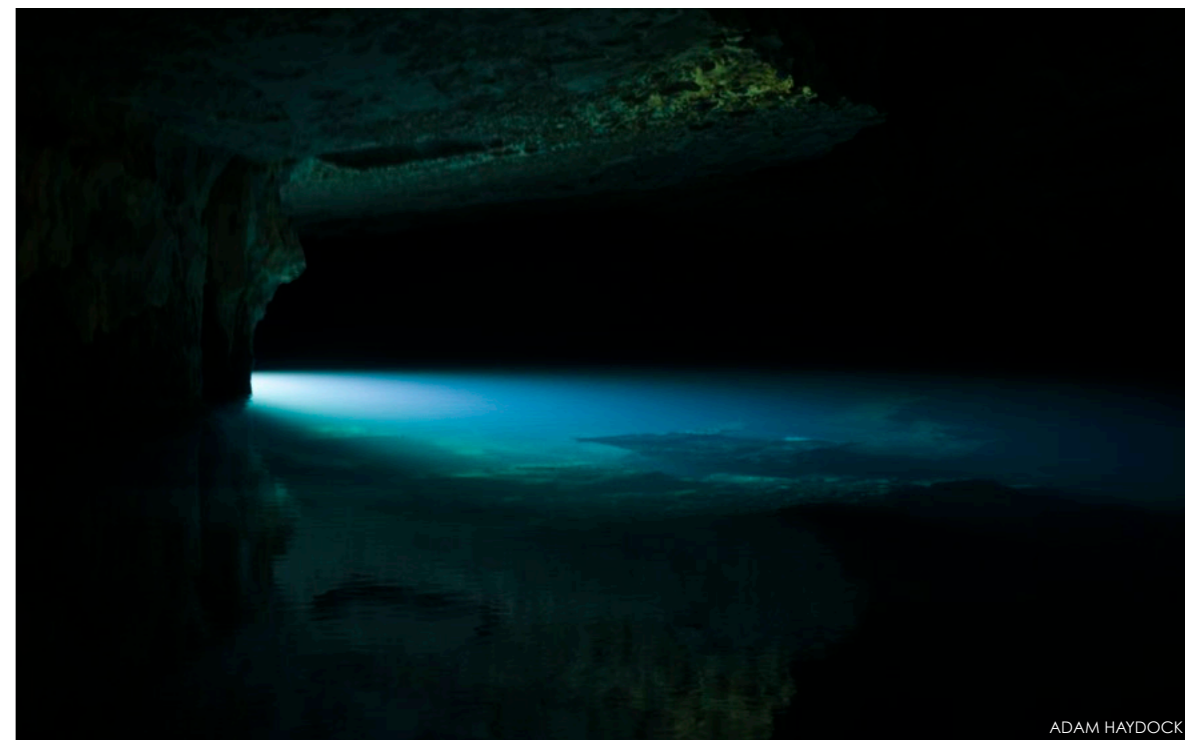
"At around 40ft, we could see waves on the surface of the water, confirming the story from the original explorer. Teddy and I were yelling back and forth at each other, giddy like schoolgirls during the ascent, which seemed to take forever. A safety stop was out of the question, and we arrived at the surface in a massive room, thundering with the sound of the waterfall.

"We took a moment to revel in our discovery, then began to seriously look at how we were going to get past the falls. Before I had time to react, Teddy had already shed his gear, handing it to me as he said, 'Wait here. Don't let my tanks sink.' I was stuck watching the gear as Teddy free-climbed the falls, which were much smaller than had been reported. We had to scream at full volume to communicate over the tumultuous thundering of the falls.

From my perspective, I could see that Teddy had chosen the more difficult side to climb, but after a few minutes of screaming back and forth, he was on the right track.

"The flow of water was so strong, it was impossible to stay near the falls, so I floated on my back, turning my lights off to save batteries, and allowed myself to be pushed around the room by the flow. After what seemed like forever, I saw the faint glow of Teddy's torch as he climbed through the dry passage back to the falls. He jumped back into the pool, with news that Sump 2 was close and looked big.

"Unfortunately, he had ripped a wrist seal on his DUI drysuit, and was afraid of the chilly 62-degree water flooding his suit on the scooter ride home. Faced with the shame of returning without data,



ADAM HAYDOCK

we hastily completed our original task of surveying the big room while Teddy endured a soaked arm. We quickly scooted out, grinning throughout the entire ride,

happy to share the good news with our team."

Encounter with a scorpion
On their first exploration dive into the

Garlock and Lilly ready to dive Sump 2, supported by Lillestolen



Garlock, Lambert and Klocker prepare to dive (right and below); Divers leaving the sump pool just at the entrance to the cave (far right)

cave, Teddy and Steve followed the ceiling looking for the alleged waterfall. The multiple ascents and descents caused their oxygen supply to be used up faster than expected. After deciding it was time to turn around, they wanted to check what they thought was an air bell with a large sandy bottom that looked like a promising lead for the waterfall. Because Steve had used so much of his oxygen supply, he decided it was best not to make another ascent and that he would wait on the bottom while Teddy went to check the lead.

While waiting for Teddy in an area around 12m deep and several hundred

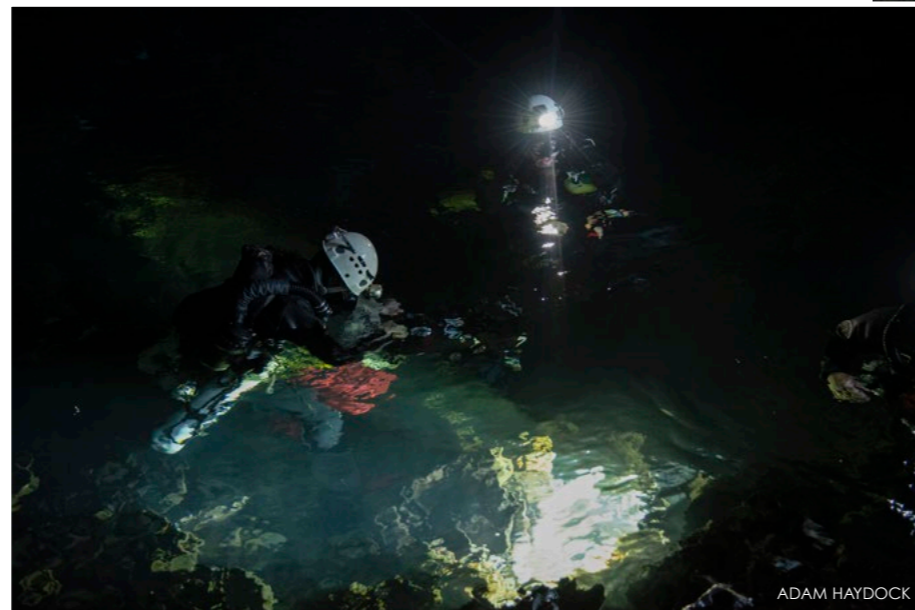
meters from any known entrance, he saw movement in the sand out of the corner of his eye. He quickly swam towards it and was amazed to see that it was a scorpion. At first, it was suspected to be the body of a dead scorpion that had washed in from the water source and been pushed there by the flow. As Steve got his GoPro out to take a picture, he was amazed to not only see that the scorpion could move, but also that it was reactive to his presence, running away at first but then turning and taking an

aggressive stance as he moved closer to it. It seemed like the scorpion was completely comfortable in that environment, reacting the same as a scorpion on land would. In that area, there was no source of light and no noticeable source of food.

Teddy had heard of scorpions being discovered in other caves in the Huautla area, and was very excited about the find. Unfortunately at the time it was discovered, they were not equipped to catch the scorpion and bring it back for study, but we were able to get over a minute of video footage, which we mailed to Oscar Francke of the Instituto de Biología, UNAM, in Mexico City. He responded: "It is an amazing video! Undoubtedly, it is *Alacran tartarus* (Francke, 1982), a genus and species I described from Sistema Huautla 37 years ago!"

Later in the expedition, there was another sighting of a scorpion underwater, and many sightings in the section of dry cave between Sumps 1 and 2.

It is still unclear how the scorpions entered the cave, how they survive in complete darkness, and what their source of food is. The only other animal life that was seen in the cave was a single tadpole in the entrance pool of Sump 2, which must have been washed in at the water source.



ADAM HAYDOCK



ADAM HAYDOCK

And it goes deep: Exploration of Sump 2

After Steve and Teddy found the waterfall room and Sump 2, the plan was for Steve and myself to dive through Sump 1, rig hand lines in the dry cave in between sumps to help climb up the waterfall and other obstacles, and then do a reconnaissance dive in Sump 2 to find out what we will be dealing with on subsequent exploration dives. With an electric drill, which we transported through the sump in a large dry tube (essentially a scooter tube with a blank lid rather than a prop on the end), task one was ticked off relatively quickly. Nevertheless, while working in the dry part of the cave, neither Steve nor I could take our eyes off Sump 2. So, as soon as the ropes were in place, we hauled both Steve's and my rebreather, and one set of 7l bailout tanks, to the next sump pool.

Fortunately, on this trip, I pulled the lucky straw and had a first go at Sump 2. I was not sure what to expect, but assumed that it would very likely be huge due to the dimensions of Sump 1. And I was not disappointed! As soon as I had my KISS Sidewinder rebreather on, and clipped

off my bailout tanks, I tied off my cave line and descended into what felt like outer space.

From a reasonably sized sump pool, the sump immediately became huge. I decided to follow the left wall, not far under the roof. My LED light felt like a candle in this huge space. I could see the floor at some distance, and occasionally the far wall. People often ask me if I get claustrophobic in caves, but I think in this situation, "agoraphobic" would be the word.

I descended, spooled out line, and descended some more, and after very little time, hit just over 40m, with the passage rapidly descending farther. On this dive, I was diving solo, with a wetsuit and small bailout tanks full of good old-fashioned air rather than some deep mix, and hence decided not to accumulate too much decompression time and returned with a big smile on my face.

As soon as I surfaced and told Steve what the sump looked like, there was no stopping him. He put on his rebreather, took the bailout tanks that I had just



ADAM HAYDOCK





ADAM HAYDOCK

used, and jumped into the pool. He followed my line and continued straight on. He kept close to the roof as I did, which suddenly took him to shallower depths, but following this, he soon found out that he only found another air bell, quite common on this cave, but the way on must be down.

With the adrenaline pumping in our bodies, we then hauled the rebreathers and tanks back to Sump 1 and dived out. What a day that was! Now we had to plan for deep dives, using trimix and scooters.

Before returning to Sump 2, the plan now was to finish some surveying in Sump 1, cleaning up some of the unnecessary lines that were the results of several dive teams trying to find the waterfall, which was done by Charlie and Zeb. This was followed by a trip by Gilly, Jon and Zeb to survey the dry cave to the waterfall, and a trip by Joe Heinrichs and Steve to take several safety bottles to Sump 2.

Charlie Roberson recalls one of those dives: "Now that the waterfall had been located, I was determined to survey

and clean up the lines in Sump 1 before pushing farther. Frustratingly, the first few dives had failed to locate the infamous waterfall or any going passage and the cave just seemed to end in a huge terminal room. We had started to doubt the existence of the waterfall and were exuberant when it was eventually found. I knew that if we didn't survey Sump 1 now, the excitement of new exploration beyond the waterfall would sidetrack this important task. Zeb and I set off on a three-hour survey dive in the huge passage. We decided to survey the line we had laid several days before when looking for going passage. Zeb, who was still getting over a cold that had swept through the team, scouted the walls for any missed leads while I surveyed the knotted line with a compass and depth gauge. The only modern addition to our survey kit was a hand-held sonar, which proved surprisingly useful for wall distances in the enormous passage.

"On the way out, we removed the line that Steve and Teddy had installed in their initial search for the waterfall as it



ADAM HAYDOCK

went from air bell to air bell along the ceiling of Sump 1. We also removed numerous remnants of line from the previous expeditions as they created an entanglement hazard."

Charlie remembers: "Jon and Gilly supported us at Sump 2 while they installed additional rigging and continued their Disto X survey of the dry portions of the cave. Unfortunately, on the way through Sump 1, the dry tube that Gilly was towing flooded, almost taking her down with it. Luckily, I was able to place the tube on top of a huge car-

To prepare for transporting large amounts of dive equipment to Sump 2, it also quickly became clear that it would be easiest to install several tyrolean traverses across the dry cave to pull the heavy equipment along tensioned ropes rather than carrying it across relatively tricky dry cave full of sharp rocks, risking the damage of gear or injury of a diver. The tyroleans also made it easier for the support crew to move the equipment from sump to sump themselves, allowing the divers who return from a deep and long dive in Sump 2 to avoid any exhaustion. These tyroleans were installed by Jon and Gilly.

A few days later, Zeb and Charlie returned to continue exploration in Sump 2, again with wetsuits and 7-liter bailout tanks, but this time they dived as a team to have more bailout.

Lilly, before exploratory dive of Sump 2

Cerro Rabón

sized boulder and take off the 10+ kgs of lead that are normally needed to submerge the tube. Unfortunately, Gilly's Disto X was in the tube that flooded.

While Sump 1 was wide and relatively clear, it was also shallow with average depths around 20m. Ten minutes into the dive, we were already at twice that depth with twice the visibility of Sump 1. Blue water and white walls!

"I stuck to the right wall and followed the ripples on the white sand floor. At about 300m of penetration, we had reached 60m of depth and the maximum operating depth (MOD) of our gas. Zeb tied off and started to survey out.

"By the time we reached our first decompression stop, we had been underground for the better part of the day and still had to do our decompression, navigate down the waterfall with



ADAM HAYDOCK

Lillestolen supports Garlock and Lilly for an exploratory dive in Sump 2 (above); Divers leaving sump pool (top left)



Lilly, before exploratory dive of Sump 2 (right); Divers in the sump pool of Sump 1 (far right)



ADAM HAYDOCK

our rebreathers, dive back through Sump 1, stow our gear on the portaledge and hike down the mountain to our field house. Needless to say, it was well past midnight before we reached the field house, but all we could think of was entering the survey data and drinking a warm Victoria beer.

"From the previous dives in Sump 2, we now knew that we will be heading deep. So for the next dive, Zeb and I brought a set of 16-litre bailout tanks each, filled with 10/70 (this means 10% oxygen, and 70% helium, which can be dived to beyond 100m of depth),

an extra staged bailout tank, two main scooters and a tow scooter as backup. Zeb ran the line while I was trying to find the way on, using a GoPro to also take some video footage.

"The cave stayed at about 70m for a while, with a wide open passage, but suddenly a large sand dune stopped our progress. We swam back a bit along our line and looked around. It looked like the cave might head shallower again, up a steep boulder slope, but by that time, we had accumulated quite a bit of decompression, and so Zeb surveyed back while I took more video. Including decompression, this dive was about four hours, and both of us were quite cold by the end."

The final two dives in Sump 2 were completed by Zeb and Teddy. They had in-cave support from Gilly and Jon, both of whom really did all the hard work in order to make these dives happen. After diving through Sump 1, they would take off their rebreathers and other equipment, which was then ferried to the start of Sump 2 by Gilly and Jon via a series of tyrolean traverses. This allowed Zeb and Teddy time to prepare for the push in a relaxed and calm manner.

Their first dive had Zeb in the front with Teddy laying the guideline. They put in a little less than 300m of line ending at a depth of 55m (with a drop to 82m on the way to the end of line). Teddy surveyed



ADAM HAYDOCK

on the way out, and they were greeted with hot chocolate by Gilly and Jon.

On the second dive a few days later, Teddy had the chance to lead, taking off from the EOL (end of line) at 55m and ascending to a passage in 24m of water. Teddy's profile on the dive was comical as he had to ascend or descend with some extreme changes in depth in order to find the way on. They kept hoping the sump would end in more dry passage, so they spent a lot of time on the ceiling, seeing if it would surface.

They eventually found the right way on and began to descend, tying off at a depth of a little over 90m. They split up; Zeb began surveying out as Teddy tied in another reel and continued another

60m, finally turning at a depth of 101m in going passage. Decompression in this sump is a challenge, requiring decompression to be cleared to a depth of 15m before descending back to 82m and doing a final decompression to the air chamber between sumps.

In-cave photography

Photographer Adam Haydock recalls: "Hauling an extra gear bag full of expensive photography equipment felt like a bag of feathers, knowing that I was about to enter one of the most inspiring and mystical caves that I have ever encountered. I was on open circuit with twin steel 85s and about to hitch a ride on Zeb Lilly's Valkyrie scooter by holding on to his crotch strap and basically keeping

a low profile through the sump to photo-document the dry passage in-between sumps.

"I had to place the strobes and the camera in Pelican dry boxes and wrap both of those boxes in an amphibious dry bag, which was equipped with a drysuit zipper and purge valve. Once I was able to get this gear off and into a final large cave pack, the next challenge was to make the bag neutrally buoyant. Rocks and lead weights were put in place to get the bag to just about the right surface buoyancy.

"The camera gear was around 9kg, but I estimated that there must have been around 10 to 13kgs of extra weight. I was able to strap this pack



ADAM HAYDOCK

Lillestolen working between the sumps



THIS PAGE: Elor climbs over Victoria Falls, which drops into Sump 1, in which Lillestolen is diving (right)



onto Teddy, and he was able to manage the bag by placing the pack on his chest in a position to deal with the negative buoyancy at depth. The bag would get heavier the deeper you would go as the buoyancy depleted, thus making this pack heavier. Teddy mentioned to me that he had a few interesting moments but was able to manage the pack and keep propelling forward on his scooter.

"Once we were able to surface and get the camera gear up to the next tier, we got the push divers set up to continue the exploration in Sump 2. Once this was complete, we had a couple hours to take photos in the dry passage in-between sumps.

"The dry passage was not all that extensive, but the rock in the upper passage was very sharp and crumbly, so care had to be taken to maneuver around without falling through into a crack or even down into the lower passage. I noticed the infamous waterfall was a bit set back in the chamber and a bit obstructed, so

I opted to get shots from the top looking down.

"I was able to get some good angles overlooking the large lagoon where we entered the dry passage and continued over the waterfall. After a few more shots, my camera decided not to work anymore. It was a bit disappointing with all of the time and effort made, leading up to where I was standing, and I was not able to get all of the shots that I wanted. Thankfully, it turned back on, and I was able to get a couple more before it turned off again. Overall, I am happy with the shots and how it all worked out, which documented the cave and its characteristics quite well."

Preparing for the return

After this year's expedition came to an end, a few things became clear immediately. First of all, we would be back—next season! There was no way we could let one of the best leads in cave exploration found on this planet rest for some years to come.

Secondly, any further exploration would be challenging, to say the least. The farthest point reached this year was two kilometers into the cave, in the second sump, at a depth of 100m, continuing downward. We did not find any significant inflows, and we still have no clue where the huge amounts of water, which flow through this cave in the wet season, sink into the karst of the Cerro Rabón. There are several options of what this cave could do farther upstream.

Sump 2 could turn into a multi-kilometer sump at significant depth, requiring the use of dual or bailout rebreathers, since



Cerro Rabón

we would quickly hit a point where we could not haul enough open-circuit bailout tanks into the cave. Multiple scooters, and tow scooters for backup, will become necessary. And due to the water temperature of about 16°C, we will also need a habitat for decompression.

Due to the undulating nature of the karst in the area, as seen by a lot of substantial depth changes in the sumps, it would be no surprise if the sump would surface soon, and we would have to get out of our dive gear and continue exploration in a massive streamway—and that after



ADAM HAYDOCK



ADAM HAYDOCK

The team at the Huautla Resurgence, Oaxaca, Mexico

Cerro Rabón

Roberson (USA), Gilly Elor (ISR/USA), Joe Heinrichs (USA), Jon Lillestolen (USA), Steve Lambert (USA), Teddy Garlock (USA) and Zeb Lilly (USA).

Follow us

For all the background on our expeditions, current and past, visit: beyondthesump.org. For regular updates on our progress, follow us at: [facebook.com/cavedive](https://www.facebook.com/cavedive). ■

REFERENCES

- KAMBESIS, P., 2003, NACIMIENTO DEL RÍO URUAPAN. AMCS ACTIVITIES NEWSLETTER 23:78-81.
- SHAWCROSS, M., 1970, MEXICO '70. CANADIAN CAVER 2:38-52.

not do this sort of exploration. Thanks also go to the National Speleological Society for supporting our expedition with exploration grants.

The team

This year's Beyond The Sump team included Adam Haydock (USA), Alejandra "Alex" Mendoza (MEX), Andreas Klocker (AUT/AUS), Charlie

a 100+m dive. In addition, there is no reason why we would not run into a third sump. This would pose the biggest possible challenge since we would have to haul all the dive gear to that point. And since every hyperbaric doctor will tell you not to carry multiple rebreathers and scooters through dry cave after a big dive, we would quickly be dealing with a situation that required camping in the cave—and not just any cave—a cave famous for discharging masses of water after rainy events.

No matter what happens, further exploration will be a challenge. Luckily, we have got an amazing team together, and have accumulated a lot of experience in diving sumps in very remote places. Above ground, the locals support us, and we have several gear manufacturers helping us prepare for next year's exploration. Bring it on!

Support

Expeditions into foreign countries would not be possible without the great support of the local communities whose land we are visiting. We were really lucky to have

both communities—whose land borders the Río Uluapan, San Bartolomé Ayautla and San Felipe Jalapa de Díaz—welcome us and provide support. The locals showed great interest in learning about the caves on their land, and are hopeful that we can help them attract tourists by showing people, reading and hearing about our exploration efforts, what amazing places this region along the Santo Domingo Canyon has to offer. Hopefully, we will be able to help them with this.

Exploring caves—in particular, caves that involve challenging technical diving in some very remote places—involves large amounts of gear. This gear needs to be tough, and, since we have to be able to fix this gear several kilometers into a cave, as simple in design as possible. Luckily, we have several gear manufacturers that support us with cutting-edge equipment. Thanks go to KISS Rebreathers, Submerge Scooters, Light Monkey, Shearwater Research, Otter Drysuits, OC Lugo Co. Inc., XDEEP, Fathom Systems and Nalgene for supporting us—without your help and the amazing gear you produce, we could



TEDDY GARLOCK

Locals from San Bartolomé Ayautla visit the team in the cave, watching them prepare for a dive (above); View from the cave entrance (top left)

