

SAN AGUSTÍN 2013 EXPEDITION

Edited by Chris Jewell



Bulletin 25

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EXPEDITION



The 110-meter drop. Photo by Chris Jewell.

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Front cover: Dave Ottewell and Christine Wilson in the Upper Gorge. Photo by Elliot Stahl.

Back cover: Laura Trowbridge and Mirek Kopertowski prepare diving gear on the platform over Sump 1. Photo by Jarvist Frost Moore.

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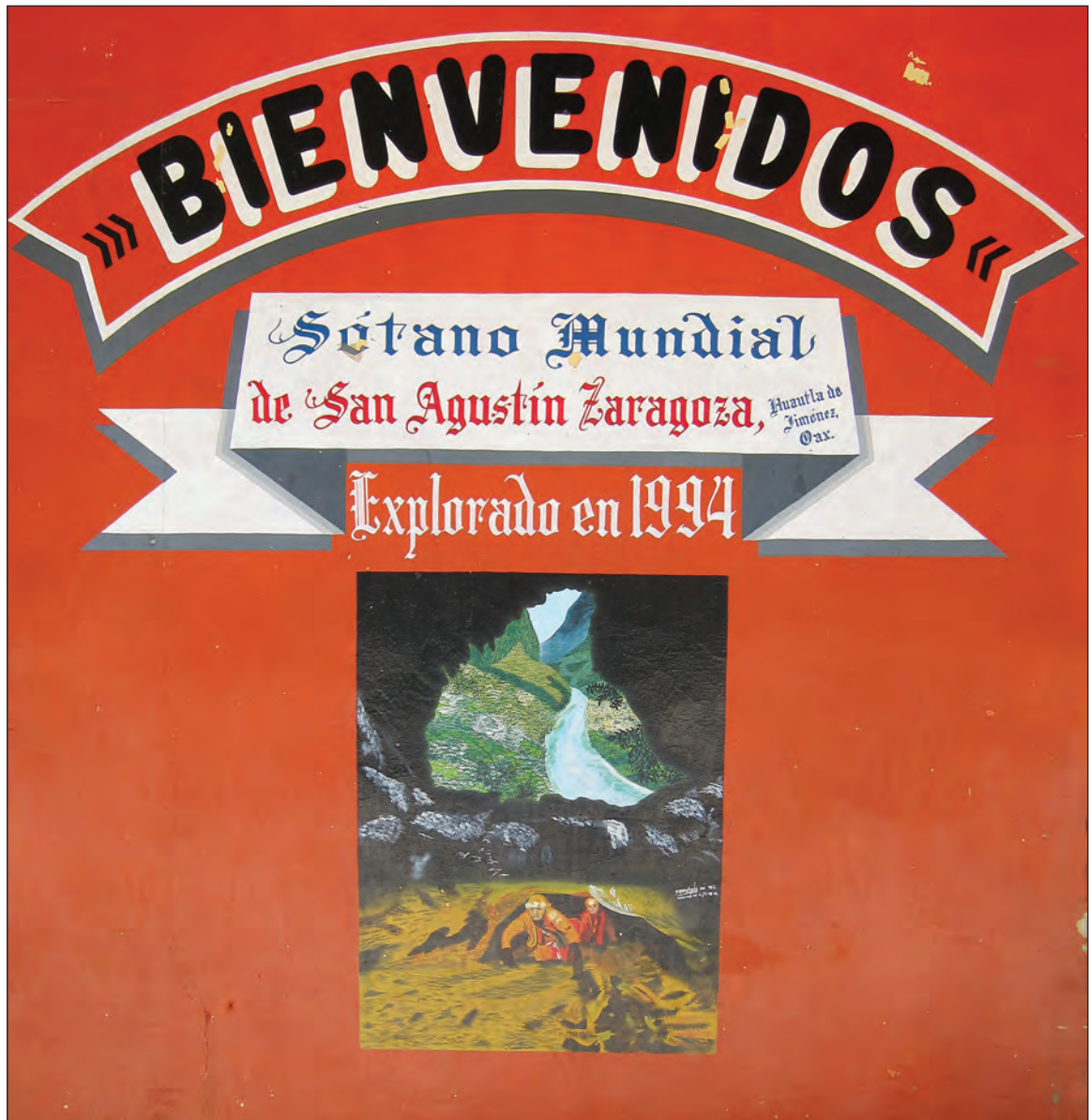
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Painting on the wall of a store at the turn onto the road into San Agustín Zaragoza.
Photo by Jarvist Moore Frost.

BACKGROUND

Chris Jewell

In the summer of 2008 Jason Mallinson brought the name Huautla into my consciousness by suggesting I read the book *Beyond the Deep* by Bill Stone and Barbara am Ende (Warner Books, 2002) written about his 1994 expedition to the system. As I read more I became increasingly gripped by a desire to go to the cave and explore, aware that there was this fantastic opportunity ready for the taking but not really daring to dream this might become a reality.

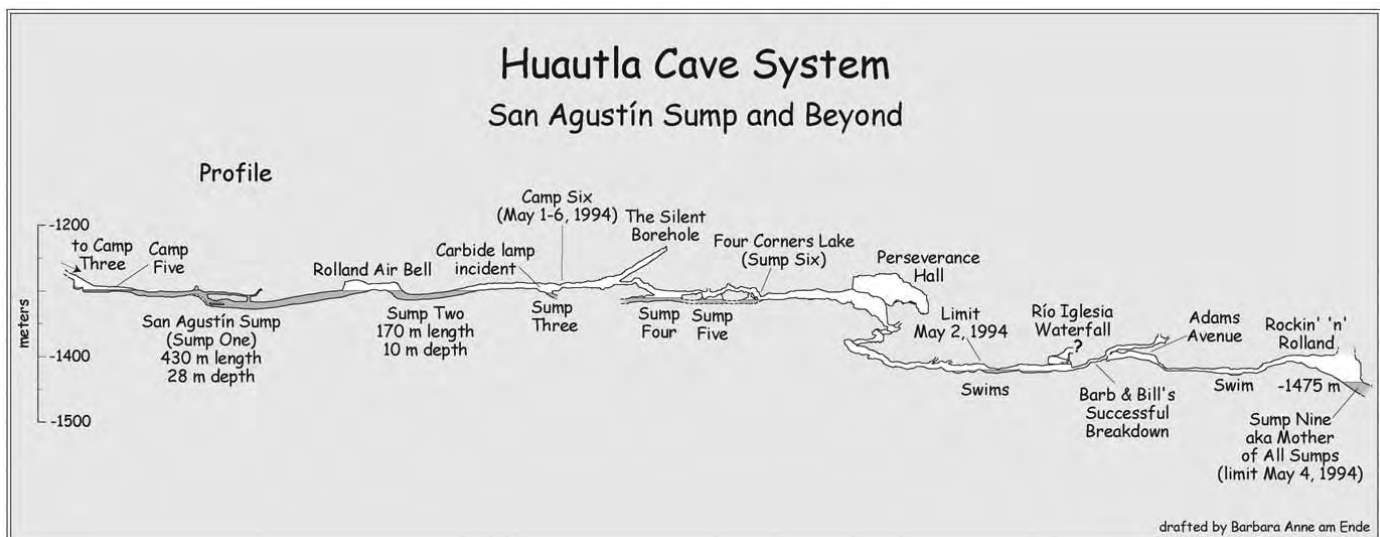
In the 70s US cavers were exploring deep caves in Mexico, the most significant of which was Sótano de San Agustín. High in the Sierra Mazateca at an altitude of over 1,600 m, San Agustín was an impressive chasm in the ground down which a sizable stream flowed. The American cavers explored downwards in the cave, however they were stopped by a sump at -840 m. As a passionate cave explorer Stone was determined not to be beaten and so acquired the diving skills and equipment necessary for an attempt on the sump in 1979. Using a pair of pony cylinders he made a short dive into the sump before he realised that it would require a much longer and deeper dive to pass the obstacle. He tried again in '81 but found it was still too long and deep to pass. Refusing not to be beaten by the cave, he turned his attention to looking for another way into the cave system.

The water that disappeared into the sump at the end of Sótano de San Agustín resurged into the outside world in a canyon 9 km away. Here they discovered a cave that they named Cueva Peña Colorada. In '84 Stone mounted a major expedition that featured many of the top cave divers of their day, including Briton Rob

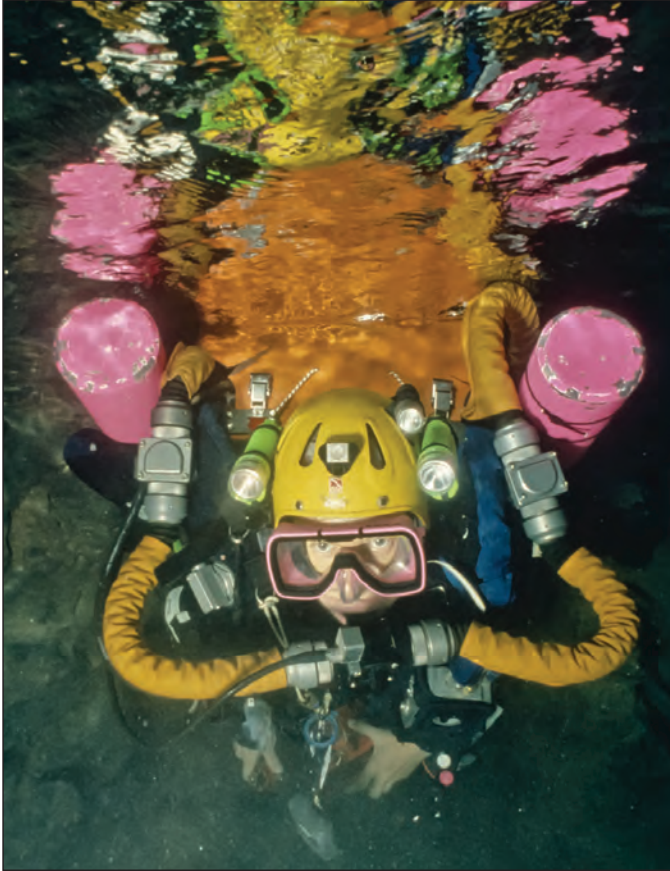
Parker. After three brutal months hauling cylinders in and out they had worked their way 7.8 km into the mountain, but the final sump dipped down to -50 m. Given the distances involved and the time it took to move the huge quantity of equipment for a deep dive it simply wasn't feasible to go any further with traditional open circuit scuba. Still refusing to give up, determined to crack the secret to the cave, after the '84 expedition Stone embarked on a new project—to develop rebreather technology that would allow him to push deeper into the Huautla cave system.

In '84 there were very few commercial options for rebreathers, and after discounting these as not suitable he created his first prototype. The CIS Lunar Mk1 was the first truly redundant rebreather, and to test his creation on December 3 and 4, 1987, Stone spent 24 hours continuously underwater with only the Mk1 in Wakulla Spring in Florida. The Mk2 and Mk3 followed, but rebreather development took time and money, and it wasn't until 1994 that he departed for Mexico with a truck full of Mk4 CIS Lunar rebreathers and some of the world's best cave divers for one of the most technologically advanced caving expeditions ever attempted.

The 1994 San Agustín expedition was massive in scale, and over three months more than 40 people were involved in hauling gear in and out of the cave. Rebreather diving was still in its infancy, and no one had ever attempted a dive like this at the bottom of a deep cave. The team carried two of the cumbersome Mk4 units down to the sump at a depth of 840 m from the surface. Here they established a camp, sleeping in hammocks hung



The discoveries by the 1994 Huautla expedition. Map by Barbara am Ende from back endpaper, *Beyond the Deep*.



Barbara am Ende about to dive through Sump 1 in 1994.
Photo by Bill Stone.

blackened out and drowned just beyond Broad's limit. A major body recovery exercise then dominated the expedition for several weeks. The death of Ian Rolland sent shock waves through the caving and cave diving community, and many people on the expedition left for home. However, knowing that he might never get another chance, Stone went back into the sump and pushed on, surfacing in large open borehole passage after another 170 m. Bill and fellow diver Barbara am Ende subsequently spent six days in this new section of cave, mapping around 2 km of new cave passage before they were stopped at another sump, named Sump 9 (they'd bypassed many other sumps). Any attempt to explore further would require diving again. Given the distances, the weight of the diving equipment, and the timescales involved there was no way they could go any further that year.

Personal circumstances and developments in other caves in Mexico moved Stone's attention elsewhere, and he never went back to Sump 9. At the same time the size, scale, and complexity of the expedition were daunting and deterred and anyone else thinking of going here. However the contribution the '94 expedition made to rebreather cave diving was undeniable. CIS Lunar continued development, releasing the Mk5 rebreather, which carried on for many years as the rebreather of choice amongst many technical divers and featured in the 1998 Wakulla 2 project.

After a couple of false starts to our attempts at an expedition a small team decided to do a reconnaissance trip to Sótano de San Agustín in 2012 to see if we could get a full scale trip off the ground the following year. With assistance from American caver and veteran traveller to the region, Ernie Garza, I, Laura Trowbridge, Mike Thomas, Claire Cohen, Mirek Kopertowski, and Jon Lillestolen (US) went to the village of San Agustín on the ridge overlooking the cave by the same name. In the space of a week and a half we re-bolted and rigged down to the -620 m Depot. We also learnt that surface based logistics of getting to the village, renting a house, and getting permission to go into the cave could be managed, and so it seemed entirely reasonable to mount a full-scale trip in 2013.

over the deep pool. British cavers made up an important part of the team, with diver Ian Rolland acting as Bill's right hand man whilst another contingent (including Rick Stanton) volunteered for the heavy lifting sherpa work. Progress in the sump was difficult however, as although the team had the sophisticated rebreathers and were fully trained, the technology was still new and unfamiliar. Eventually, though, Kenny Broad managed to crack the sump and surfaced in a large airbell. Rolland dived next, but tragedy struck when the recently diagnosed diabetic

2012 RECONNAISSANCE EXPEDITION

Mike Thomas

I had first heard about this deep Mexican cave system back in 1992, when my interest in cave diving started with a talk by Martyn Farr at Guildford University that I attended with my then BSAC open water diving club. In 1994 the cave became a little more famous to the outside world and cavers in general with Bill Stones' fateful but ultimately successful expedition, which was covered in part by *National Geographic* and the expedition book *Beyond the Deep* by William Stone and Barbara am Ende. Over the years since, several international expeditions including UK cavers and divers have gone into the area, but I had never been in a position to join them until now. Chris Jewell proposed a two-part expedition to dive the terminal sump of the Huautla Cave System via the San Agustín entrance, The Mother of all Sumps. The original departure date for the first expedition was early 2011, but unfortunately due to logistics and political reasons this was delayed until 2012. An expedition of this magnitude is an enormous undertaking, and although the delay was incredibly frustrating for Chris, it was not the first time in exploration history that delays of this nature have happened. But for me the years delay was good as it enabled me to get in on the act and participate in the 2012 reconnaissance expedition to one of the world's finest deep caves.

To the overall aim of the 2012 and 2013 Huautla expeditions was to put a team of divers beyond the first sumps to dive the terminal sump and explore other going passages, including the Río Iglesia waterfall that was not looked at in 1994. Our aim for the 2012 reconnaissance is to put a small team into the field to get the ball rolling. Firstly we needed to meet our American contacts who would introduce us to our Mexican contacts so we could hopefully get permission from the local *presidente* to explore the cave. We then needed to sort some accommodation in the village of San Agustín and to befriend the local Mazatec Indians, who worship the gods that live in the caves. Finally, if we succeed with all of the above we could start to re-rig the cave and see how far we could get underground. We took enough rope and rigging gear in order to reach the 620 Depot, that being 620 m below the surface. Beyond that point the cave gets wet, wetsuits would be

needed, and is beyond the limits of what we could achieve on this trip. Team members for the 2012 recon trip were:

Chris Jewell, expedition leader (Cave Diving Group, Bristol Exploration Club)
 Laura Trowbridge (Cave Diving Group, Bristol Exploration Club, Wessex Cave Club)
 Claire Cohen (Cave Diving Group, Wessex Cave Club)
 Michael Thomas (Cave Diving Group, Wessex Cave Club)
 Mirek Kopertowski (Sekcja Grotolazów Wrocław)
 Jon Lillestolen (National Speleological Society Cave Diving Group)
 Ernie Garza (National Speleological Society, Association for Mexican Cave Studies)

9 January 2012—After a long journey from home, including a nine-hour bus ride from Mexico City, we finally arrived in Huautla a little dazed and confused. Mexico, especially in the rural parts, is a developing country, and as such things don't happen like they do at home; you have to go with the flow and not fight it too much. Huautla is the main town in the area and was bigger than we thought it would be. We met Ernie Garza early in the morning at the bus station; Ernie has been caving in the region for many years and was our fixer. It's safe to say without Ernie we would have found things very difficult if not impossible to sort out. Once introductions were made, Ernie suggested breakfast at Rosita's. This is the Hunters Lodge of Huautla; it's been the meeting place of cavers in the area for many years. Over a welcome meal Ernie outlined a plan and explained how we were to get the final 15 km up the road to San Agustín, our final destination. But first we needed supplies and cooking utensils, so a shopping expedition took place for several hours. If you know where to look, Huautla has everything an expedition needs to set up a base camp. Finally we loaded our huge kit bags and supplies into the back of Ernie's truck, and he introduced us to our mode of transport for the next ten days, the people's taxi. Basically it's an open-backed truck with a cage around it that the



Chris Jewell with school children in San Agustín. Photo by Mike Thomas.

driver stuffs as many passengers as he can in before setting off to the destination you ask for. They are extremely cheap and fairly regular; you just hope that the driver is good and does not lose the road. Judging by the huge number of memorial markers on the roads this happens a little too often. Finally we reached San Agustín and found the accommodation Ernie had sorted for us. We were to rent a room from Jaime Escudero Rodríguez for the duration. Jaime had given up part of his family house for us and is another important part of the Huautla story. Jaime was involved

in the 1994 expedition with Bill Stone. After we settled in and took stock of the rather impressive view down into the dolines of San Agustín and Río Iglesia, Ernie suggested we take a walk down to the entrance proper for a look. Apparently it was OK for us to start caving, and permission proper would be got later. Ernie then left us on our own in San Agustín and headed back to La Colata, where some American cavers were based. We set off down the doline with most of the village watching us, wondering what could possibly go wrong.



Cavers at the bottom of the Jungle Drop, the entrance to Sótano de San Agustín. Photo by Mike Thomas.

10 January—The walk down into the doline is fairly steep and drops around 250 meters from the village down through corn fields and jungle, a great way to start and finish any trip. Our plan today was to start rigging the cave; we hoped to get the entrance rigged and the climb up into the Fools' Day Extension sorted and then et as far down Fools' Day as we could. All six of us set off with heavy bags, including 600 m of the rope we had with us plus all the rigging gear. The first pitch is the Jungle Drop, around 60 m on a steep ramp covered in jungle, and by jungle I mean proper jungle with mud, foliage, loose rocks, and most of Mexico's known species of creepy crawlies. To be honest this pitch is just a pain in the arse, it's slippery and hard to prusik on and full of loose rock. I think most of us had a moment with large falling rocks, On the way down you tried not to hang around in the fall line, and on the way up you just tried not to think of things falling on you. It was better at night when you could not see as much. Jon had the honour of rigging and descending the Jungle Drop, and the rest of us followed on with heavy bags, some going down the rope faster than others. The next pitch is the Slip and Slide Pitch, a series of short traverses and a couple of ramp-like pitches down to the floor of the cave proper. Due to the cave's taking water while we were there the original bolt placements from 1994 were in a fairly large stream and not an option for us, so we bolted a new route down the left hand side just clear of the water. At the bottom of Slip and Slide the stream turns left into the huge Sala Grande, which leads down to the original route to the 620 Depot. Our route was up a 30 m high mud slope on the right using a hand line left in situ from '94. It was American PMI rope, so much stiffer and a little thicker than what we are used to using in the UK. This was later re-rigged using a slightly better old rope from '94, and a new bolt placed to back up the natural belay. The top of the mud slope gives an amazing view back up the cave to daylight some 100 m above, and the way on goes over a huge sand pile following the right hand wall to a breakdown pile and little drop between rocks to an old fossil passage. After 100 m or so of easy walking passage, another drop between rocks is met. This very windy hole takes you into a 30 m sandy crawl and then the start of Fools' Day proper. Fools' Day Extension is a large, easy-going, walking-size passage with 23 short pitches. It brings you to the top of the Bowl Hole Series with its mighty impressive first pitch of 110 vertical meters. At the top of the 110 you are 300 m below the cave entrance. On this first day we re-bolted and rigged around 16 or 17 of the pitches in Fools' Day and then started the climb back out of the cave and up to the village feeling very pleased with our progress and very ready for food and bed.

11 January—On reaching the top of the Jungle Drop yesterday, several of us spotted a small cave in the wall about 10 m down from the top that went through to the doline. This would save us a little prusiking, but more importantly gave a better hang for the rope down the Jungle Drop. This morning Claire and I went back to the Jungle Drop to re-rig it without dropping the rope. Claire abseiled down from the top and swung through the jungle to land in the cave entrance where I was waiting. I then re-rigged the drop with a lovely four-way hang and spent some time gardening the pitch of the biggest rocks. After, we headed back up the hill and hitched into town for supplies. Jon

and Mirek entered the cave after we had re-rigged the entrance and carried on rigging the Fools' Day Extension and down into the Bowl Hole, rigging the mighty 110 m pitch before running out of rope. Close behind them Chris and Laura carried in 180 m of rope from the surface and continued down the Bowl Hole to around the halfway mark some 450 to 500m below the surface. The trip was turned due to running out of power in the drill batteries. Around evening time and while the other guys were exiting the cave, I asked Jaime Escudero if it was possible to visit the church in the village, which played an important part in the '94 expedition, as it was here the villagers carried Ian Rolland after his death in the terminal sump. At first Jaime said it was not possible, but a little while later he returned with the key and said we could go. I felt it was important we go and say hello and I think Jaime realized that. We spent a short but thoughtful and solemn time and Jaime also showed his respect. It was only later I realized that the photo in *Beyond The Deep* of the church shows Jaime Escudero reading the service for Ian Rolland. That evening the team was again very happy and celebrated on good food and beer. Jaime also joined us for a swift pint before Mrs Escudero called him home.

12 January—Chris, Laura, Jon, and Mirek were having a well-deserved rest day that turned into a long surface walk followed by a trip into Huautla for food and other nice things not available in San Agustín. Claire and I set off down the cave with the final 180 m of rope in one bag. We carried all the rope into the cave in long lengths and then cut it at the bottom of each pitch, as we really had no idea of pitch lengths before we started. Our aim was to drop the bag into a pool at the top of the 110,m pitch to soak the rope over night, as it was brand new. The guys were then going to pull it through a Stop the following day before using it. All was going well until about the six or seventh pitch in the Fools' Day Extension. This one pitch, of about 15 m, was rather awkward; it had a re-belay on an off-camber completely smooth bulge of rock that you had to swing into. With the weight of 180 m of rope under me I had a couple of attempts to get my short cowstail in and failed, so I put my long in; in theory it would make getting the short in much easier after that. Just as I nearly got the short in, I slipped off the smooth stance and in the ensuing swing and cursing I dropped the bloody bag off my harness, splash, straight into a pool of water. Not a problem, I would just have to wade in and get it. Once down I waded in and promptly found myself swimming in a deep pool, though all the other pools up to this point were knee deep. I had to get this bag back, so after taking my SRT kit off I started doing a search of the pool. After five minutes and no luck, I got out of the swimming pool to warm up, and Claire volunteered to continue the search. Luckily after four or five duck dives Claire located the bag, and so ended our swimming for the day. This cave is really not cold, and after a few minutes of caving we had warmed up despite being rather wet. The rest of the trip to the 110 and then back to the surface went without a hitch, and the bag and I had no further falling outs. With a heavy load, or any load come to that, a locking karabiner would have prevented this incident. On returning to the village we found a political meeting on the village basketball court in full swing. This in itself is not very interesting, but what was interesting was smiling nicely at the

four heavily armed policemen who got very twitchy when two gringos in funny suits tried to sneak around the out side of the basketball court to get home.

13 January—Laura, Chris, Mirek, and Jon set off into San Agustín to finish rigging down to the 620 Depot, while Claire and I took a walk down into the Río Iglesia doline to follow the river down to the Sótano del Río Iglesia. Some fun was had crossing the river in a couple of places to reach the cave, as the river was somewhat bigger than it looked from the top of the doline 200 m above. On the way out of the doline we followed one of the ancient Mazatec trails that have been used to cross the area for eons. After regaining our village, it was back to hitchhiking into Huautla to find a phone signal and buy fresh supplies. Mirek's caving trip was cut short due to light failure just at the start of Fools' Day Extension. The other guys carried on and Mirek returned to camp alone to operate on his light with the help of Jaime Escudero and the local village store, which amazingly had a tube of two-part glue he could use to re-pot the light after the operation. Laura, Chris, and Jon completed the rigging and reached the 620 Depot, a large flat boulder with a rope stash from '94 at the head of the Grand Cascade. The passage here is called Tommy's Borehole and is very, very big, and the final 77 m pitch that drops you into the borehole is the Space Drop, which well deserves its name. It's a completely free hanging pitch with only one wall just in sight, an impressive but slightly scary place. The team took some photos and had a good look around and then headed out, reaching our camp at midnight just a little tired.

14 January—Today was our turn to visit the 620 Depot. Claire, Mirek with a newly repaired light, and I set off prepared for a long day out. Jon unfortunately had to return home to the USA today, so we said our goodbyes for this year and set off. We had a very pleasant trip with no gear apart from food and fluid to the top of the 110 m pitch. From here it gets a little more serious; descending the 110 is an awe-inspiring ride, as it's a big pitch with totally blank walls. There are around eight rebelays, and none of them have handy little ledges to make the rebelays easy. It took a while to get used to the exposure, especially as I descended last and could see the entire pitch with two cavers below me. At the floor of the 110 a short 25 m pitch followed, taking us to the next big pitch, the 60 m. This again is a large bit of cave, the rope is against the wall, and the pitch has several rebelays. Unfortunately the walls of this pitch are covered in loose crumbly rock that rains down the entire pitch, so it is one caver at a time to avoid getting hit by debris. Following the loose 60 m pitch another short 37 m pitch takes the caver to the head of the mighty 77 m free-hanging Space Drop down into Tommy's Borehole. It's been a long time since I have shut my eyes on a pitch to regain my composure, but after negotiating the completely free hanging rebelay a few meters down, this was one of those times. Claire and Mirek were on the floor and looked a very long way away. On reaching the floor we walked a short distance in massive passage and descended a short 15 m handline of circa 1994 rope to reach the 620 Depot and sat down for lunch. With only the three of us in the system and down at a depth of 620 m

we felt a little remote. Our plan on the way out was to de-rig the Bowl Hole Series and stash the ropes at convenient points away from the water, so leaving them ready for next year's expedition. After starting to climb up the Space Drop and contemplating 600 m more of up, I started thinking that my entire Huautla training, which was done in Hunters Hole and Rhino Rift, may not have been adequate. Luckily I prefer the up bit of SRT, and months of racing mountain bikes had increased my fitness to acceptable levels. After a few hours of up and de-rigging we finally sat down at the top of the 110. At this point we felt we were out, with only 25 more pitches to go. Thirteen hours after leaving our base camp in the village we returned home after waking every dog in the neighbourhood, and there are nearly as many dogs as people. The trip to the 620 and back is a bit of a long day out. Next year heading further down to Camp 3 for a sleep will be a better option. Sitting in our little hut having a late night feed and reading my book, I realized it had started to rain. . . .

15 January—We awoke this morning to the constant drum of rain on the tin roof of our hut. It was that glorious moment when you realize that all of today's plans have just been postponed, and five cavers dug deep into sleeping bags and returned to slumber. Eventually one by one we got up and made breakfast and contemplated the outside world—well, what we could see of it, as the cloud was down on the deck and even the local dogs were indoors. In late morning we asked Jaime Escudero how long the weather was likely to stay bad, and he looked at us as only a local would when foreigners ask bloody stupid questions and



Laura Trowbridge in the Fools' Day Extension.
Photo by Mike Thomas.



Jon Lillestolen at the top of one of the long pitches in the Bowl Hole series. Photo by Chris Jewell.

there in less than two hours. The de-rig was actually pretty easy, as all we were doing was pulling the ropes and leaving them in a safe place as close to the pitch head as possible. I also spent some time taking photographs in the Fools' Day Extension, with some willing models and some not so willing. Our last job of the day was to bring 40 m of good old rope from the '94 expedition that had been stashed at the top of the 110 back to re-rig the mud climb up from the bottom of the Slip and Slide to the Fools' Day Extension, as the old rope was in poor shape. On arriving back at our base, we found Chris had a partially successful day. He had met the San Agustín *ajente*, the head woman. This is a first for the area, as most village head posts are still held by men. The *ajente* was very supportive of the expedition and looked forward to seeing us next year. But when they tried to visit the *presidente* in Huautla, who outranks the *ajente* in San Agustín, they waited in line for a couple of hours only to be told the *presidente* is seeing no more people today, please come back tomorrow.

17 January—At early o'clock Ernie turned up to collect Chris and go visit the *presidente* in Huautla again. This time they were successful, and with his approval of the 2013 plans Chris and Ernie were back in time for lunch. The rest of us had an easy morning of relaxing and hut chores. Our plan for the afternoon was to grant Jaime Escudero his wish. He wanted to go caving again in San Agustín. He had been once before with Bill Stone in '94 and wanted to visit the cave again. For a Mazatec Indian, this is a rare request as most locals believe that caves are the homes of the gods that control the afterlife and want nothing to do with them. When we passed through the village on the way to the cave I noticed several locals making the sign of the cross when they realized Jaime was accompanying us underground. Claire had lent Jaime her SRT kit, and Mirek said he would guard the entrance, so the caving team was Ernie, Jaime, Chris, Laura and I. The idea to get Jaime down the Jungle Drop was to double-rig the pitch and put Jaime on a short rope to Chris on the other rope. Jaime said he could remember how to go up the rope and was happy to do so alone. After a short instruction by Chris on descending, they set off, and in short time called rope free. The rest of us followed on down and we all met up at the bottom of the Slip and Slide. Jaime appeared to be a happy man. We took Jaime on a short trip into the huge chamber that is the start of the original route down the cave. When we arrived back on the surface, many villagers really seemed surprised Jaime had returned from the cave. That evening Jaime joined us for dinner and a few beers, and even Mrs Escudero joined us for a quick beer, but she declined the western food and brought in some of her own for us to have, and yes, even though our landlord and friend was a hero of the day, he still had to be home by 9 pm.

So ended our 2012 San Agustín recon expedition. we managed to achieve all of our aims and set up a good base of contacts and friends for next year. The re-bolting and rope stored in the cave will mean a good head start on rigging the cave down to the sump next year. We said our goodbyes to Jaime, his family, and the village and started our long journeys home.

said anything up to a week. The decision was made to hitchhike into Huautla for a good meal and beer. We arrived in two separate vehicles, mostly at the same time and mostly damp and cold. But the meal was good and the beer better. We visited Waldo's, who is a caver-friendly bar owner with interesting décor on the walls. Over several beers some of the American contingent of cavers in the area turned up and we spent a good time swapping stories and making new friends. Eventually we hitched home and at some point during the night the rain finally stopped.

16 January—The early morning sun was burning the last of the cloud away and we had a chance to start drying some gear and preparing for the day's de-rigging of the Fools' Day Extension. While we were doing this we watched the school children arriving at school, sloshing through the mud on the tracks, some in uniforms some not. Ernie had arrived this morning to take Chris on a political mission for the day to arrange for 2013. He also brought some books to give to the school to help ease our permissions game. The visit to the school was a little different: At first we were treated with a little suspicion, but eventually we were invited to watch the morning assembly, complete with national flags and much marching and saluting of said flag. Following this we were asked to do a school photograph. With emails swapped with the school and Chris and Ernie off on their political mission, Laura, Claire, Mirek, and I descended the San Agustín doline again and set off to the top of the 110 to de-rig Fools' Day. By now it was a routine trip to the 110, and we were

2013 EXPEDITION

Chris Jewell

The most crucial difficulty to overcome was how to get our kit to Mexico. During previous attempts to launch a trip we'd investigated shipping gear directly to Mexico, but fears of seeing our equipment trapped in a Mexican port for weeks coupled with lukewarm reception from any shipping company I spoke with about doing with put us off. The best course of action seemed to be to ship to the US, then do what the American cavers have been doing for years—load up vehicles in Texas and drive down. Of course for that to work we needed some friendly cavers in Texas whom we could ship our gear to and who would loan us some vehicles to drive down in. This is where Ernie once again was a great help by offering us his 1995 Chevy van, and Ron Rutherford agreed to be our shipping consignee.

In the spring of 2012 recruitment, grant applications, and letters to sponsors were begun in earnest. Several cavers had previously expressed an interest in a San Agustín trip when the idea was first raised, and momentum began to gather quickly. A team of divers (myself, Jason Mallinson, Rich Hudson, Mirek Kopertowski and Jon Lillestolen), plus several reserves, was put together, and we held several meetings where I outlined the plan and objectives. Then in June we held our first training weekend at Mark Wright's Magma Tower rope access training site in Sheffield. In addition to a core UK-based team, several cavers from overseas also volunteered for the expedition, including a contingent from Canada, the US, Poland, and Mexico. Over the months I received many enquiries, and the email list grew to over 100 names, however when push came to shove I had expedition deposits for something like 40 cavers, most of whom then committed and put forward their full fee. We knew we needed a big

team, and I developed a plan based around this number. At the same time grant money from several sources started to come through and some key sponsors came on board.

Our first major milestone was in mid-December, when we boxed up 500 kg of diving equipment at my house in Manchester and sent it to the US. As our departure mid-February deadline approached the activity levels picked up, and I spent all of January either purchasing items for the expedition online and having them shipped to our address in the US or co-ordinating the arrival of other supplies to our US base.

However, with only a couple of weeks to go the main equipment from the UK hadn't reached the US. Despite the two wooden crates being collected in December they were still in the UK in early January. After our agent lost the ATA Carnet document, further delays ensued, and I even debated cancelling the shipment and sending the kit by air freight instead. Several sleepless nights were spent worrying about the situation. The whole expedition rested on the delivery of this kit, and although more than enough time had been allowed for the freight it was going to be a close-run thing. Dozens of emails were sent daily to both the UK and US agents in an effort to fast track our shipment to avoid any more delays. Thankfully Ron, our consignee in the US, works for a British company, so he was used to being awake and online early. Finally on February 15, just the day before we flew to Texas, the gear arrived at Ron's house.

Laura and I flew into Texas on February 15. The first cavers would be flying into Mexico city on February 23, which gave us one week to sort the supplies in Texas, pack the vehicles, and drive down through Mexico to the city of Oaxaca, where we could

meet with the head of the Mexican Civil Protection, before getting to the village of San Agustín and setting everything up. We spent several busy days unpacking boxes, filling cylinders, and shopping for food whilst the local Texan cavers looked after us. Waiting for us in Ernie's house were 100 lbs of lead shot, 36 kg of Sofnolime, three large industrial cylinders of oxygen and helium, a compressor being loaned to us by Bauer, a KISS baby booster also on loan from the manufacturer, 2 km of caving rope, 2.5 km of dive line and countless other packages from Amazon and eBay containing a huge variety of items all necessary to make the expedition run smoothly. From army pack frames, to white boards, spares for the stoves, drill chargers, thermarest patching kits, everything had been purchased online or arranged



At the Magma Tower rope access training centre. Photo by Chris Jewell.

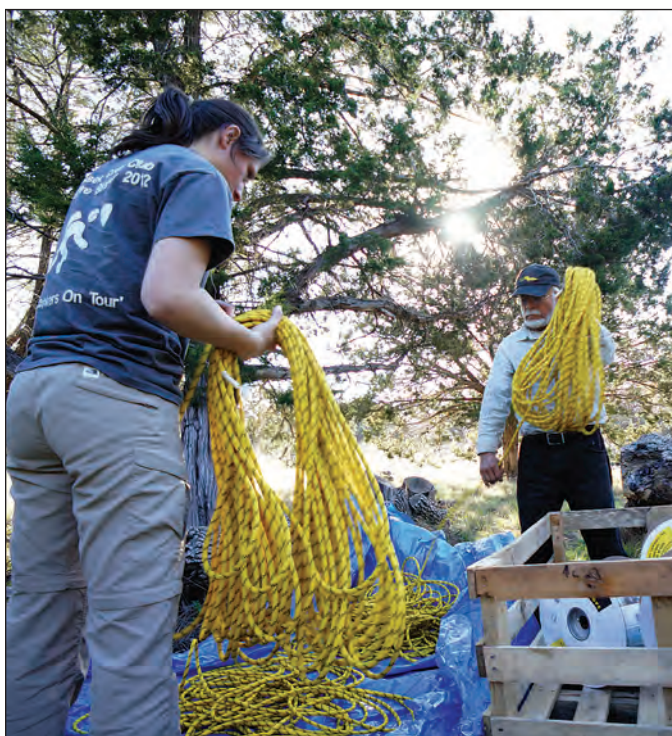
Chris Jewell sorts expedition equipment and supplies in the main room at Ernie Garza's house in Austin, Texas. Photo by Laura Trowbridge.

directly with the people providing it. Although I'd been told it had all arrived, it wasn't until we unpacked in Texas we could see that nothing crucial was missing and I could breathe a sigh of relief. After several long days filling cylinders, mixing trimix, pouring lead shot into pouches, washing and coiling ropes, doing food shopping, and packing the vehicles we were ready to leave.

I was very worried about the drive down. In 2011 Bill Stone had delayed his own expedition to Mexico due to the drug-related violence in northern Mexico, and although things seemed to have calmed down I was still a bit nervous. These problems also meant an increased police and military presence, and I'd heard horror stories about check points and trying to cross the Mexican border with large volumes of expensive equipment. To make matters worse our main expedition vehicle was a 1995 Chevy van that had hardly been used in the last five years, and my mechanical knowledge about vehicles was extremely limited.

My fears about the van were realised when at 8 pm a few hours south of the Mexican border the van began to overheat whilst climbing a hill. We pulled over on the hard shoulder and watched the steam pour out of the engine compartment. After

Laura Trowbridge and Ernie Garza pack rope in Texas. Photo by Chris Jewell.



topping off the radiator fluid we tried to crawl on, but five minutes later we were back on the hard shoulder again. Stood in the dark with massive 18-wheelers roaring past staring at an engine I knew nothing about, I did wonder how we'd really expect to make it to San Agustín. Fortunately Laura, Ron, and Ernie were more mechanically minded, and with their assistance we coaxed the van the rest of the way up the hill. From here plenty of rolling downhill let the engine cool and I nodded off to sleep, only to be awoken several hours later when we hit a speed bump

Ron Rutherford works on the van on the way down from Texas. Photo by Chris Jewell.





The village of San Agustín. Photo by Christine Stenner.

doing something close to 70 mph. Regular visitors to Mexico will be familiar with their speed bumps, or *topes*, vicious lumps of concrete that blend into the road surface and seem to simply appear from nowhere. Finally at 11 pm we arrived in the town of Matehuala, found a motel, and got some sleep. The next day after breakfast we visited the local car parts shop, swapped the



thermostat out of the van, and pushed on south. However the curse of our vehicles didn't give up that easily. That night as we passed Puebla the alternator in Ron's truck failed. Again we kept going until we could find somewhere to sleep, and once again in the morning the local shops provided the parts we needed. Our visit to the capital city of the region, Oaxaca, was brief. The head of Civil Protection was out and not back till after the weekend. We were anxious to get to the village of San Agustín high in the mountains, and so we left with the arrangement that we'd send someone to go and collect the official letter we needed later. It turned out that we'd send Ernie back just two days later.

The village of San Agustín that gives the cave its name sits on a ridge between two large dolines, and at the bottom of one of these was our cave. The local Mexican inhabitants are Mazatec Indians who speak Spanish as a second language and still maintain some of their old traditions. Our host in the village was Jamie Escuerdo, who has seen all of the past expeditions since the '70s come and go and remembers them all. His modest stone-built house with a corrugated roof provided our dining room, kitchen, and gear shed, and the solitary electricity socket our drill and light charging station.

Once the expedition was established in the village, it was onto the business of rigging the cave. In 2012 we'd left ropes coiled at the top of pitches in the first part of the cave, the Fools' Day Extension, and very quickly this was re-installed and the top of the big-pitch series, the Bowl Hole, was reached. In 2012 we'd done plenty of re-bolting, and now this was continued right down to the sump. In total over the two years we placed something like 115 new anchors in the cave, all of them 3/8-inch stainless steel thru bolts with stainless steel hangers. We also calculate that we used around 1,700 m of rope and 250 mallions to reach the first sump.

Fast behind the riggers the 500 kg of diving gear began to be moved down the cave. Rebreathers were stripped down to component parts that could be carried separately, regulators stowed in Daren drums, drysuits and underclothes that needed to be kept dry in roll-top dry bags, cylinder valves protected against knocks and bumps and anything that would inadvertently turn them on, a waste precious gas. Packing gear for transport underground is always an art, but here it was crucial. We made up over 25 large bags between 16 and 18 kg each, plus the dry tubes that would take our camping gear underwater. These were too large to fit in bags, so we strapped these to army pack frames to transport then underground.

To break the journey into manageable chunks we arranged kit staging points, places where bags could be left for the next team. Soon piles of bags began to appear at these places in the cave, only to be whisked away and transported deeper into the

Dave Ottewell climbing into the Fools' Day Extension from the San Agustín entrance chamber. Photo by Chris Jewell.



Chris Jewell and Laura Trowbridge in the Metro. Photo by Jarvist Moore Frost.



Chris Jewell, Mirek Kopertowski, and Adam Walker set up the Nicola radio in Camp 3. Photo by Jarvist Moore Frost.

Spacious Camp 3. Photo by Chris Jewell.



depths by the ongoing relay of cavers.

Camp 3 at a depth of 725 m was reached and re-established quickly so that our first camping team, comprising Jason Mal-linson, Mark Wright, Martin Holroyd, Pete Ward, Tim Allen, and Jarvist Moore Frost, could rig to the sump and Jason could get on with the job of re-lining it. No one had visited this camp since the '94 expedition, and the previous team had left remnants of their stay, which we removed over the course of the expedition. The camp was remarked by many people to be one of the most comfortable underground camps they'd ever stayed in. The ambi-ent temperature was warm, the ground dry, and the large chamber had plenty of space for large numbers of people to sleep. Our plan relied upon there being lots of people in the cave to move the mountain of gear, so we didn't want the camping situation to be a bottleneck on people coming in. We therefore set up a large number of communal sleeping bags and mats. This worked very well in the spacious Sala Grande de Mazateca, which on the busiest night had 15 people sleeping there!

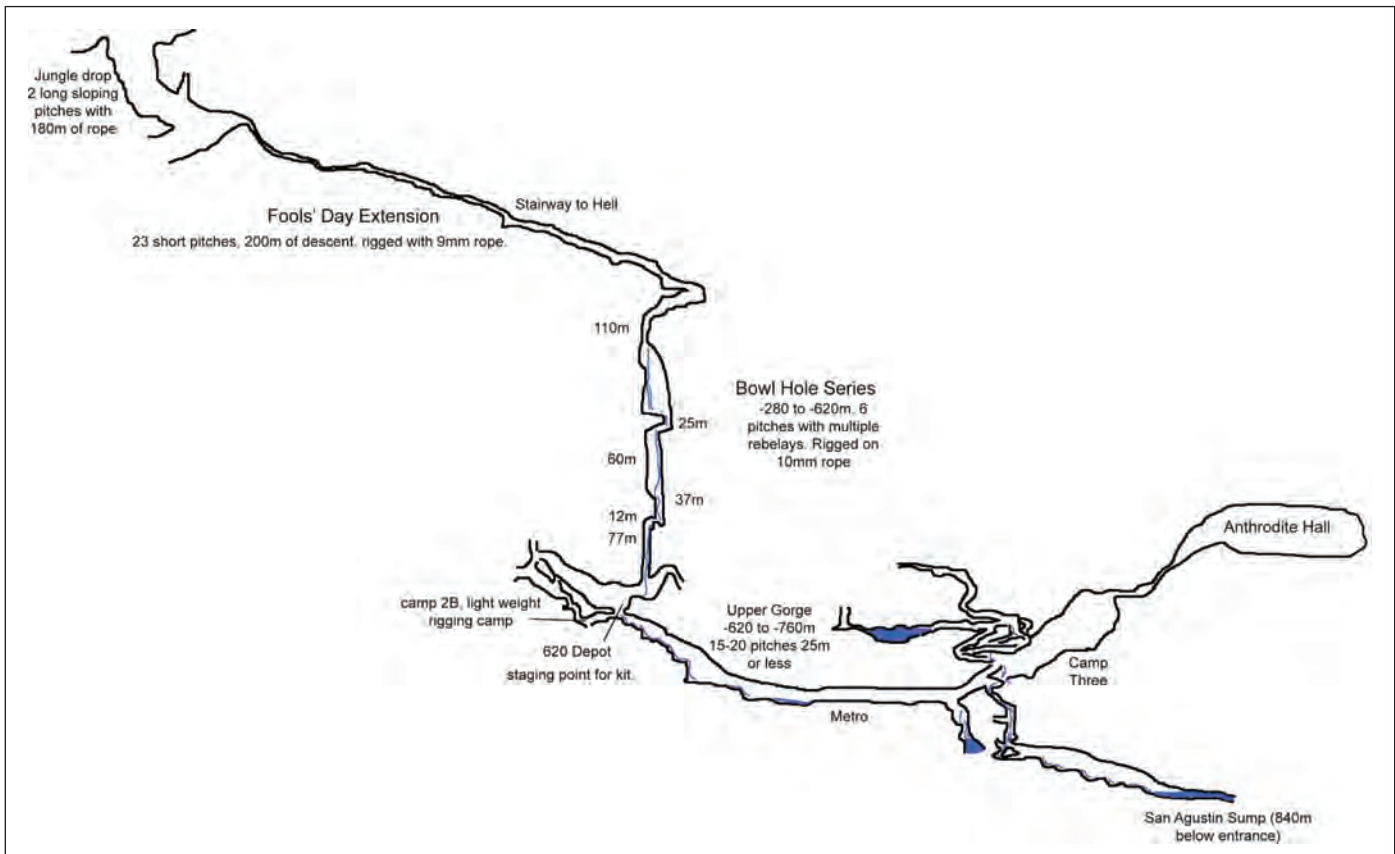
A couple of hours' travel below camp, the final stretch of passage before Sump 1 was a narrow river canyon full of white water that reverberated with a deafening roar. In '94 Bill Stone's divers slept and lived on a platform made from webbing and scaffold poles strung across the sump pool in this noisy place. However we preferred to travel back up the Lower Gorge to the more comfortable camp above. Although we weren't sleeping by the sump, we still needed somewhere to assemble our equip-ment and get changed. The clean-washed rock with steep sides offered only a few ledges we could use. Fortunately, though, we'd

been pre-warned and had our own light-weight platform to place over the water. This was amazingly strong and supportive, but assembling delicate rebreathers with small parts above a deep pool of water focused the mind! Thankfully nothing critical was dropped into the swirling waters.

Ahead of schedule, just one week after we'd started caving, Jason was ready for a first dive into Sump 1. Assisted into the water by Mike Bottomley, Tom Baker, and Andy Kuszyk, his mission would be to reinstall the guide line through the under-water passage. The sump had been lined back in '94, but 19 years had taken its toll and there were only fragments of the original line. Although it had taken 20+ dives for the original explorers to find their way through, we had the advantage of their survey and mapping data plus the occasional piece of diving debris to mark the way. Jason relined all of Sumps 1 and 2 in a single dive using his KISS rebreather. After surfacing he made a short reconnaissance of the cave ahead before returning to Camp 3 around midnight.

It took another week of work in the cave before the whole five-man team was ready to dive through and camp on the far side. Jason was ready a day ahead of everyone else and spent an extra night at Camp 6, from where he was able to reconnoitre the route down to Sump 9.

We'd carried four large dry tubes into the cave, but between all of the divers we had enough equipment to fill six of the contain-ers. Fortunately three of our diving team were using rebreathers, so that with each diver making two journeys underwater we'd get all of our camping equipment past Sumps 1 and 2. Made





Richard Hudson in the Lower Gorge between Camp 3 and Sump 1. Photo by Elliott Stahl.

from HDPE, the tubes were 700 mm in length and had an inside diameter of 200 mm. At either end, an end-cap with O-ring seals meant it'd stay watertight to considerable depth. Empty they weighed around 13 kg, and full of food and camping equipment it'd be well over 20 kg. Therefore for ease of transport they were taken down to the sump empty or lightly packed and prepared for diving at the water's edge.

Despite being heavy in air, in the water the tubes were extremely buoyant. We knew this would be an issue, but it was infeasible to carry additional lead down the cave to sink the tubes. Jason had the idea of filling large caving bags with rocks

and strapping these to the tubes. This worked well, but it took a very large, bulky bag of rocks to sink the tubes. By the time we'd strapped various other items to the outside of the containers they created an enormous amount of drag in the water, and the three rebreather divers who towed them had to swim extremely slowly, fighting against the inertia of the bundle.

Once on the far side the five divers slept at the camp Stone had christened Camp 6 in '94. From here it was about 1.7 km to Sump 9, but once route finding was worked out this distance could be covered in around an hour. After our first night at Camp 6 we headed off to Sump 9 carrying diving gear for Jason plus ropes and other vertical exploration gear. The route down to the sump involved plenty of swimming and wading through deep pools, so we ran ropes through these, reusing what had been left from '94 wherever possible. The route to Sump 9 involves a clamber though the breakdown in Adams Avenue, but we hoped that by diving Sump 7 we'd find a bypass that would be easier with the bulky diving equipment. Jason was despatched into the sump whilst the rest of us climbed round Adams Avenue and soon found Jason on the far side. A short carry later and he was at Sump 9 and ready to dive. Whilst Jason was underwater the rest of the team began to look at possible leads that had been previously unexplored. We marked several points for a return



Laura Trowbridge and Mirek Kopertowski prepare equipment on the dive platform over Sump 1. Photo by Jarvist Moore Frost.



Mirek Kopertowski watches Jon Lillestolen cross Four Corners Lake between the sumps. Photo by Chris Jewell.

visit before heading to the most promising lead, the Ríó Iglesia waterfall. During his recon the day before Jason had found a route to the top of the waterfall Stone had found in '94, negating the need for any aid climbing. Rich, Jon, Mirek, and I navigated through the breakdown around Adams Avenue and used the sound of the water to follow in Jason's footsteps. After a short time we

dropped down into the raging stream and headed upwards. No sooner than we had done this, though, we hit a major boulder choke. Attempts at squeezing under or over and bypassing the choke in various ways were made, but with no success, and so after conducting a short survey we began to work our way back to camp. On route we met Jason, who reported bad visibility in

Sump 9. Photo by Chris Jewell.





Rich Hudson and Jon Lillestolen survey in So Long and Thanks for All the Fish. Photo by Chris Jewell.

Climbing beside the Río Iglesia waterfall. A route through breakdown to the top of the falls was discovered that avoided the need to bolt this climb. Photo by Chris Jewell.

Jason Mallinson begins his dive with dry-caving equipment to check out the air-bell passage in Sump 9. Photo by Chris Jewell.

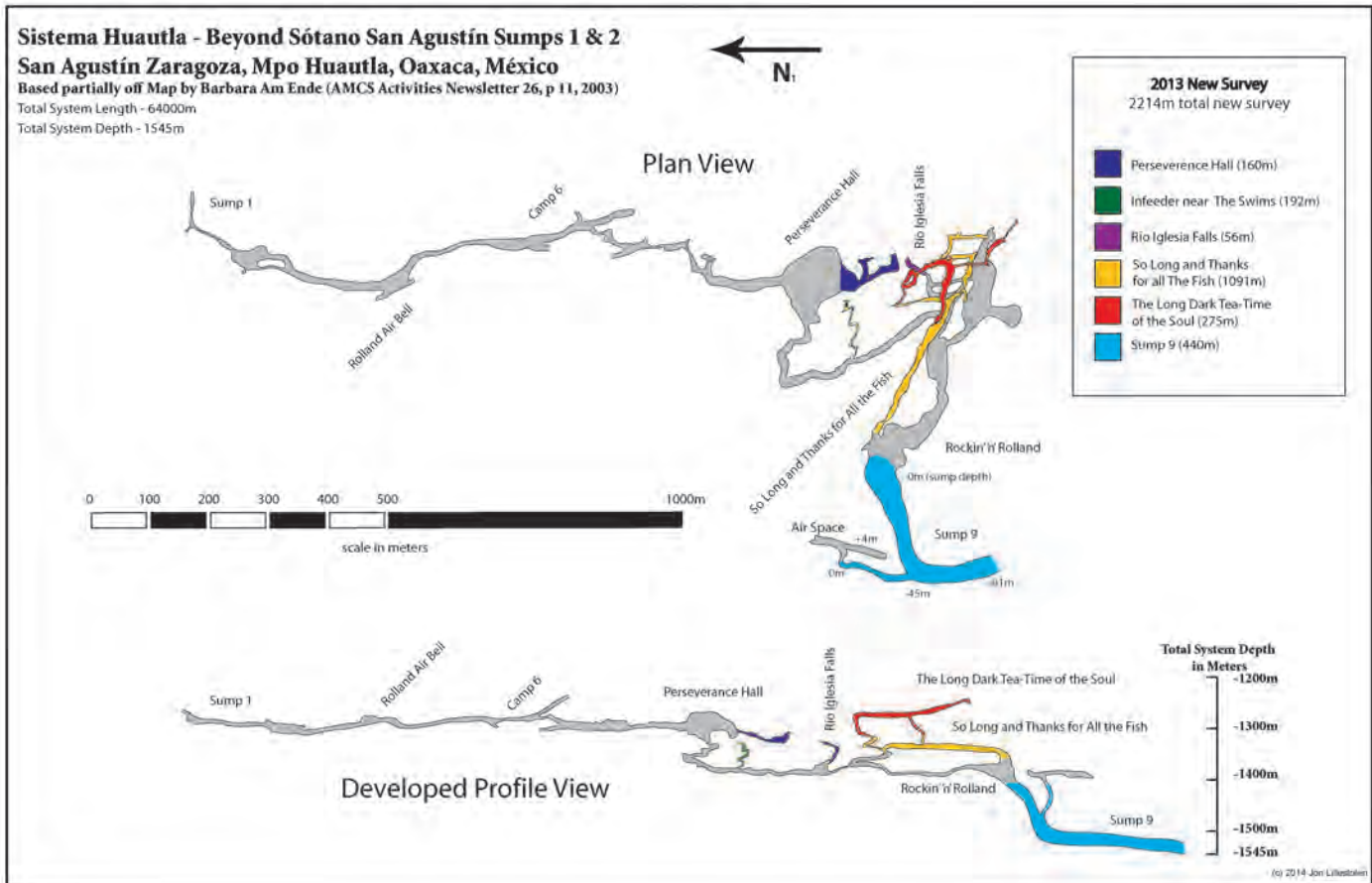


the sump and a depth of 30 m. Slightly dejected we journeyed back to camp together.

The following day it was my turn to dive, and after repeating the exercise of carrying diving gear down through the lakes and large chambers to Sump 7, I followed Jason's line through. On the far side the team helped me to Sump 8 so that I could dive in the large pool. The water from Sump 7 flowed nosily into Sump 8 but could not be seen flowing out, so it seemed reasonable to check the sump for possible ways on underwater. Despite checking all the walls no route could be found, and so we moved on to Sump 9. Here I laid a new dive line following the right hand wall down. I soon reached a depth of 50 m in a steeply sloping passage. Beyond, the cave rose up to 45 m depth steadily before the gradient increased and a steady ascent was made to -6 m, where I completed five minutes of decompression. After 250 m of diving I surfaced in a static, muddy pool with a steeply ascending mud-crack floored ramp. Carefully depositing my rebreather on the ramp, I scrambled upwards, trying to find any kind of purchase on the slick muddy surface. After a flat out crawl and a short awkward climb I decided I'd gone far enough and that to carry on would need a rope and for me to get out of my drysuit. This new section of cave wasn't very promising and certainly wasn't the main way on, so on the way back to dive base I attempted to look for the other passage that must take the main flow of the water. However by now the visibility had deteriorated and I could see no alternatives.

Whilst I'd been underwater Jason had stayed on the surface looking for alternative routes out of the large chamber, and right at the back he'd found a route obscured by boulders that looked very interesting. Rich, Jon, and Mirek had also not wasted any





time and had surveyed several small side passages further up the cave, but none of these went a great distance.

The following day Jason headed into the water with a section of 8 mm rope. Following my line he surfaced and removed his drysuit. More flexible and without the fear of damaging the suit, he was able to climb higher up and used the rope to protect his route down, however ultimately the cave closed down and no other dry routes could be found here. Whilst the diving wasn't going according to plan, the passage at the back of the Sump 9 chamber did yield some results. The passage the four of us explored that day, which was named So Long and Thanks for All the Fish, was a dry high-level route with several junctions and a pitch that dropped back down into Adams Avenue.

We'd now had several days of diving, but we'd still not located the main way forward in the sump. So we decided to try a new tactic. Diving together, Mallinson would follow his old line down and lay a new line along the left hand wall, and I would follow my line down the right hand wall, and by staying in sight of each other we'd surely locate the missing underwater tunnel. On the way to the sump some of the pools we passed appeared much deeper than expected, and once down in the main streamway our suspicions were confirmed. The water levels had risen considerably, though it was still judged safe to continue. The only place where we might get trapped was in the Sump 9 chamber, but the new So Long and Thanks for All the Fish route would give us a way out.

Underwater using our combined tactics, sure enough at -45 m Jason found a tunnel heading off. A large erosion feature underwater told him that a significant water flow entered, and he swam off into the unknown. I saw him disappear and laid a line over to where he'd been before following after him. After 150 m or so and down at -60 m I still hadn't caught up, but figured I could be more useful surveying, so turned round and began to take readings as I headed out. As I decompressed on the route out Jason caught up with me, and I could see he was surveying as well. Back at -6 m completing our final stops, he waved me over and began gesticulating at something between the rocks. Following his gaze I could see a small scorpion sitting on top of a rock with its pincers in the air. Jason moved towards it and it reacted by trying to nip at his fingers. It was clearly alive, quite happy living in the sump pool, and irritated at being disturbed. Whilst Jason and I were playing with our underwater scorpion, Rich, Jon, and Mirek had completed the survey of So Long and Thanks for All the Fish and now pushed on into the Long Dark Tea-Time of the Soul, which had been mapped for 400 m and was still continuing.

We were pleased that we'd found the way on underwater, but now we only had one more day of diving left. So we restocked back at camp and carried more supplies down to the sump. At the same time the rest of the exploration team had found what sounded like a very exciting lead. I was in two minds about whether to prioritise the dry exploration over the diving. I compromised



Photo by Eliot Stahl.

ANTHODITE

Photo by Adam Walker.



Tom Clayton views the signature formations in Anthodite Hall. Photo by Nick Vieira.





Rich Hudson and frostwork in Anthodite Hall.
Photo by Elliot Stahl.



Photo by Nich Vieira.

HALL

Photo by Adam Walker.



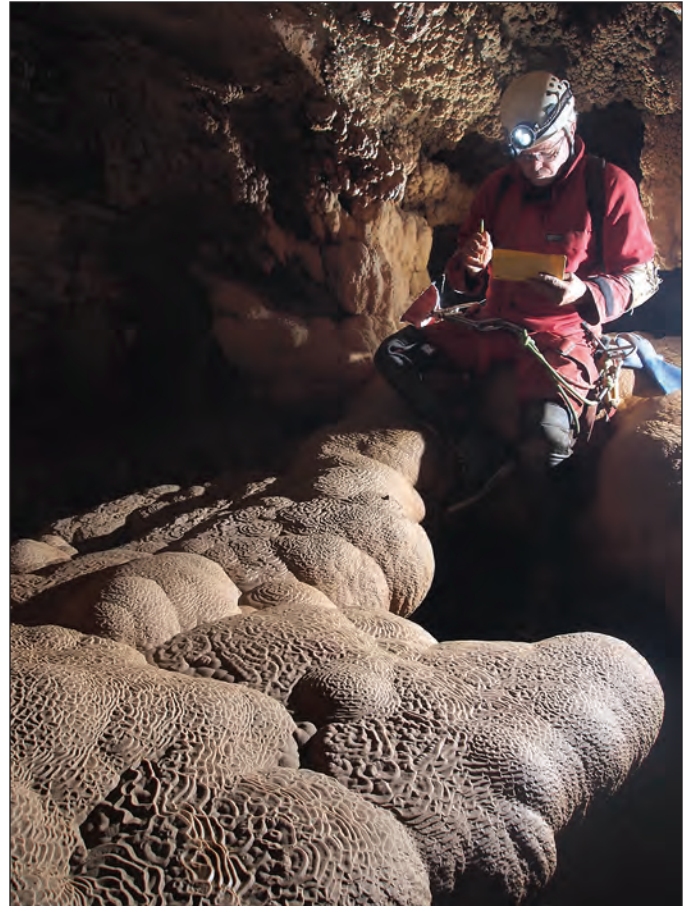
Bill Steele sketching in new discoveries in the old route down the cave used before the discovery of the Fools' Day Extension. Photo by Elliot Stahl.

with myself. We'd take all the supplies for both of us to dive, and Jason would enter the water first. I could then go and assist with the above-water exploration for two and a half hours until I thought Jason would have returned, and it would then be my turn to explore. I filmed the team dropping two pitches in the Long Dark Tea-Time of the Soul before my time was up with them, but the final pitch put us back to a section of cave we'd already mapped. After I raced back to the sump Jason's lights appeared, and I scurried down to the water's edge. He'd followed the same flat roof he'd seen on the previous day, and it had carried on down steadily. Our depth was limited because of the trimix gas we carried, and eventually Jason had reached -81 m and could go no further. He offered me the opportunity to repeat his dive for myself, but I was quite happy that we'd done everything we could in the sump on this expedition. After packing up all the gear and helping Jason back to Sump 7, the rest of the team appeared and helped me move my gear as well. They had managed to follow some other passages and encountered another pitch. However, faced with an equipment and time shortage they had not been able to descend it. As we'd already managed to find several routes back on ourselves, we weren't particularly worried about this and simply assumed it would head back down into a piece of the cave we already knew about. It wasn't until later, when we processed the survey data, that we could see it was dropping into unknown territory. Over the course of a week the team succeeded in mapping 1,774 m of new dry passage that had been missed in 1994, which proves the benefit of a second pair of eyes.

Before we'd left the UK we had been reminded that Huautla was the second deepest cave in the Western Hemisphere, behind Cueva Cheve (also in Mexico). There were just 9 meters between the two caves, so as soon as we'd started diving that record had been broken. Following Jason's final dive, the new depth of the whole system was 1545 m. When I asked him how pleased he was with this, he was able to point out that it was he and Rick Stanton who'd been to the deepest point in Cheve and originally set the previous record.

It was a mammoth effort to get all the diving gear back to camp in one go, but we managed to get all except two loads back to Camp 6 that night. Throughout our stay at Camp 6 we used Nicola radios to stay in contact with the rest of team back at Camp 3. This meant planning our exit was easier, and we knew there would be a team at Camp 3 waiting for us. We decided that Rich, Jon, and Mirek should head back early in the morning, whilst Jason and myself tidied up camp and collected the final two loads.

I took several photos of Jason on the way back underwater, but the visibility wasn't great. As we'd eaten all the food, the six dry tubes' worth of gear was now turned into just four, and I volunteered to make the final lonely swim back to Camp six to collect the last tube on my own. When I got back to the near side Jason assisted me out of the water before he left, and I got changed and began the slow ascent back to the peace, calm, and security of Camp 3.



The exploration phase of our expedition was now over just three weeks into our seven-week stay in Mexico. However we all knew we'd just done the easy bit. There was a mountain of equipment down at the sump pool that all needed to be hauled up to the surface before the cave was de-rigged and the camp stripped. We were all anxious to begin the huge task, but the diving team had now all spent around nine days underground continuously. It made sense therefore that they should head to the surface as soon as possible for some rest and relaxation before coming back down stronger and fitter. The compromise was that diving team, with help from Laura Trowbridge, Connor Roe, Mark Sims, Adam Walmsley, and Katy Graham, did a day of hauling from the sump to camp before all the divers except Jon left for the outside world.

We'd planned the expedition in such a way that many different cavers could join in for short periods of time, typically two or three weeks. One major advantage of this was that fresh, strong, and fit new people appeared frequently to help; we even benefited from the assistance of some cavers taking part in the J2 expedition in the form of Nicholaus Viera and Elliot Stahl when they joined our trip to take a break from the other expedition. This was essential over the following weeks as the kit began to make its way up the cave rapidly. There were several more underground camps and filming and photography trips, and with less time pressure now the exploration had been completed we all took the opportunity to visit the impressive Anthodite Hall.

A significant quantity of equipment had been stored underground following the 94 expedition and we found that most of it was now unusable. We therefore saw the opportunity to do our bit for cave conservation by removing these unwanted items. With spare capacity and time, we managed to clean up the cave by removing old rope, old camping equipment and other items.

It is a rare privilege to be able to visit a cave like San Agustin, a natural wonder deep beneath the earth. I think that it is important that all modern caving teams aspire to leave as little impact as possible on the cave environment.

I hope that the new stainless steel through bolts we placed will last for many years reducing the need for future teams to add their own anchors. I am confident that any new team of cavers visiting San Agustin will find the cave in excellent condition and I hope that future generations will enjoy visiting this impressive cave – hopefully extending it ever further and deeper.



Some of the material from the 1994 expedition found in Camp 3. Everything except the heavy metal object, an attempt at hydropower generation, was removed from the cave by the 2013 expedition. Photo by Jarvist Frost Moore.

The kit removal process went better than we could have hoped, allowing us to stay ahead of schedule the whole time. When the final team from the UK, Dave Ottewell, Helen Blyth, Christine Wilson, Steve Woods, Tom Clayton, Andy Chapman, Brian Norton, and Kevin Gannon, arrived and went down to Camp 3 just six bags of diving gear remained underground. They made short work of these, the camping kit, plus lots of rop. Combined with some long days from the surface by others, the entire cave except the entrance rope was de-rigged by the end of week 6.

Week 7 saw the arrival of Bill Steele and a team of US cavers who wanted to look at some leads that were part of the old route down the cave, before the discovery of the Fools' Day Extension. Being ahead of schedule, we also had time to take our Mexican host Jamie Escuerdo and his son Virgilio into the cave. The exploration team was successful, and with some combined Anglo-American effort succeed in finding over 500 m of new passage. This had been missed during the original exploration during the 70s. It is a familiar case of cavers going back to places with better lights and seeing passages in the roof they'd never noticed before. With this addition, when all the survey data was added up the total additional passage mapped in 2013 was 2.7 km.

Finally on 13 April we finished packing the truck, and Ernie Garza, who'd caught the bus from the US to help me drive back, and I pulled out of the village and headed for the US and ultimately, for me the UK and home.

A significant quantity of equipment had been stored underground following the '94 expedition and most of it was now unusable. With spare capacity in the team we managed to clean up the cave by removing old rope, old camping equipment, and other items throughout the duration of the expedition. I think that it is important that modern caving teams aspire to leave as little impact as possible on the cave environment. Our new stainless steel through bolts should last for many years, reducing the need for future teams to create bolt rash, and I am confident that any new group of cavers will find the cave in excellent condition.

An expedition of this nature is only possible because of the large number of people who were involved. To go to somewhere like Sump 9 requires a pyramid of effort with lots of cavers supporting a smaller team who ultimately support a few individuals who make the crucial advance underground. This selfless team approach was essential, and I have made the point in many presentations that I view the achievements of the expedition as a team achievement—every meter found was found by the whole team, which numbered 47 in total.

Personnel

Tim Allen	Jason Mallinson
Kyle Baker	Herman Miller
Ryan Baker	Brian Norton
Tom Baker	Hassan Ortiz
Helen Blyth	Dave Ottewell
Mike Bottomley	Connor Roe
Andy Chapman	Ron Rutherford
Tom Clayton	Tommy Shifflett
Steve Eginore	Mark Sims
Ramón Espinasa	Elliot Stahl
Jarvist Moore Frost	Bill Steele
Kevin Gannon	Christian Stenner
Ernie Garza	Laura Trowbridge
Rafał Górecki	Peter Tschannen
Kathleen Graham	Gustavo Vela
Jared Habiak	Nicholaus Vieira
Martin Holroyd	Adam Walker
Richard Hudson	Adam Walmsly
Chris Jewell	Pete Ward
Mirek Kopertowski	Christine Wilson
Tammera Kostya	Steve Woods
Andy Kuszyk	Mark Wright
Jon Lillestolen	Emily Zuber
Vincente Loreto	

Some members of the expedition in Camp 3. From left, standing Gustavo Vela, Ramón Espinasa, Hassan Ortiz, Jared Habiak, Christian Stenner, Ryan Baker, Mirek Kopertowski, Conner Roe, Kyle Baker; sitting Vincente Loreto, Chris Jewel, Laura Trowbridge, Rich Hudson, Jon Lillestolen. Photo by Jarvist Moore Frost.

Timeline**Advance Week**

- 15/2/13 (Fri)—Pallets of expedition gear arrive in Texas.
 16/2/13 (Sat)—Jewell and Trowbridge fly to Austin, Texas.
 17/2/13 (Sun)—Jewell and Trowbridge unpack gear and begin to sort through piles of equipment.
 18/2/13 (Mon)—Cylinders are filled, rope washed, shopping done.
 19/2/13 (Tues)—Remaining cylinders filled and other gear prepared. Bags packed and truck packed.
 20/2/13 (Wed)—Leave Texas. Van overheats on way down. Spend night in Matahuala.
 21/2/13 (Thurs)—Day two on the road. Call by to see Ron's friend. Change tyre. Rutherford's truck's alternator fails late at night and we end up sleeping in a motel which rents by the hour.
 22/2/13 (Fri)—Get to Oaxaca. Head of Civil Protection not there so arrange to get someone else to collect letter of invitation. Head off towards Huautla but only make it to Teotitlán as the old road proves very windy and Ron gets car sick (even though he is driving).
 23/2/13 (Sat)—Arrive in Huautla. Eat, get shopping, and visit Waldo. Drive to San Agustín. Meet Jamie and rent houses. In the evening go to La Carlotta to collect expedition items. It is very misty during drive back so Trowbridge has to walk in front of the truck.
 24/2/13 (Sun)—We ask Waldo about seeing the *presidente* but he advises us to get letter from Civil Protection first.

Week 1

- 25/2/13 (Mon)—Roe, Kopertowski, Frost arrive in the morning. Write 'report' in Spanish then put Garza on bus to Oaxaca



Ernie Garza returns with letter of permission from the *presidente* of *municipio* Huautla de Jiménez. Photo by Chris Jewell.

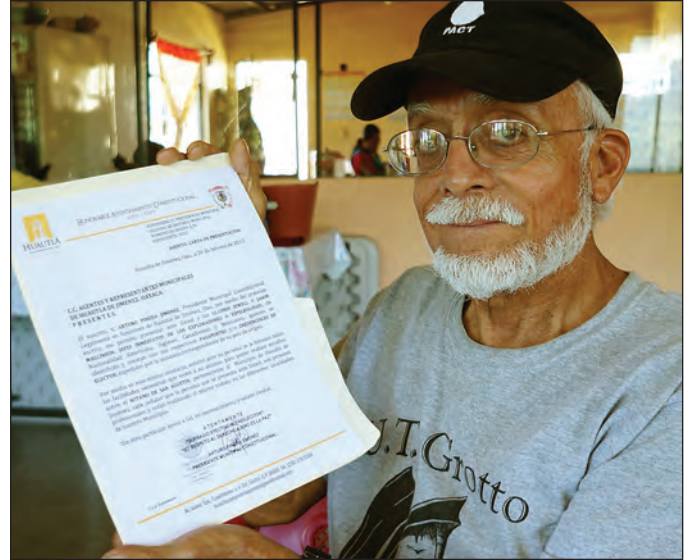
to get the letter from the head of the Civil Protection. Allen, Wright, Ward and Holroyd arrive in the evening.

26/2/13 (Tues)—Rutherford, Roe and Frost go caving, rigging to halfway down the Fools' Day Extension. Garza returns with letter from Civil Protection. Go with Jamie to see *presidente*. They ask us to come back the following day.

27/2/13 (Wed)—Most underground. Collect the permission letter from the *presidente*. Allen and others rig to start of Bowl Hole Series before finding issues with PMI rope. 600 metres of rope washed and hung within the cave. Canadian cavers arrive.

28/2/13 (Thurs)—Jewell goes with Canadians (Habiak, Stenner, Walker, Kostya) to top of 110m. Allen and others rig down Bowl Hole to depot. Kopertowski and Frost rig the first 100m of rope in Upper Gorge. Mallinson arrives.

1/3/13 (Fri)—Roe, Holroyd and Jewell rig to Camp 3. Canadians



bounce to 620 Depot. R. Baker and K. Baker arrive. Mallinson carries gear into the cave.

2/3/13 (Sat)—First team of Mallinson, Frost, Allen, Ward, Holroyd and Wright go down to Camp 3, Frost bounces out due to lack of available pits. Issues with the MSR stoves; taken to camp, stripped and cleaned.

3/3/13 (Sun)—Camping team rig to the sump. Other people on the surface make a bounce trip to 620 Depot. Lillestolen and the Mexican cavers arrive in San Agustín.

Week 2

4/3/13 (Mon)—Walker, Kostya, Jewell, and Trowbridge go to Camp 3. Team finish rigging to sump. Jason dives Sump 1 and Sump 2. Hudson, Bottomley, Kuszyk, T. Baker arrive in San Agustín.

5/3/13 (Tues)—Holroyd, Ward, Allen, Wright leave Camp 3. Mallinson takes dry tube to sump then leaves for surface. Walker, Jewell, Trowbridge and Kostya carry kit from 620 to camp. Kopertowski, Roe and Frost arrive and do same. Hudson, Bottomley, T. Baker bounce to camp with gear.

6/3/13 (Wed)—Move kit from Camp 3 to sump in the morning (Walker, Jewell, Kopertowski, Frost, Roe, Trowbridge). Walker and Kostya exit cave. Roe and Trowbridge collect kit from 620 whilst Jewell, Kopertowski, Roe and Frost make second trip down. Habiak, Stenner and four Mexican cavers arrive at camp. Then R. Baker and K. Baker appear about 10:30pm. Thirteen people at Camp 3.

7/3/13 (Thurs)—Thirteen people visit the sump – with a bag each! Diving kit assembled at sump. Hudson and Lillestolen arrive at Camp 3. Fifteen people at camp 3!

8/3/13 (Fri)—Jewell, Trowbridge, Kopertowski, Roe, Frost, four Mexican cavers plus R. Baker and K. Baker exit cave. Kuszyk, Bottomley, T. Baker, Hudson and Lillestolen enter the cave and carry dive kit to sump. All sleep at Camp 3.

Conner Roe descends the Jungle Drop carrying a dry tube. Photo by Chris Jewell.

9/3/13 (Sat)—Day in Huautla for many people. Hudson, Lillestolen, Kuszyk, Bottomley and T. Baker carry rest of dive kit to sump, prep and check dive kit. Habiak and Stenner exit cave.

10/3/13 (Sun)—Lillestolen and Hudson exit the cave. Mallinson enters cave and heads to sump. With assistance from Bottomley, Kuszyk and T. Baker one dry tube is packed and weighted for diving. All four cavers sleep at Camp 3.

Week 3

11/3/13 (Mon)—Mallinson packs and weights a second dry tube then makes two dives through sump with dry tubes and establishes Camp 6. Jewell and Trowbridge enter cave and go to sump to prepare a dry tube for diving. Bottomley, Kuszyk and T. Baker exit the cave. Roe goes to Camp 3.

12/3/13 (Tues)—Jewell and Roe go to sump. Mallinson makes recon trip to Sump 9. Jewell dives one dry tube of gear through and brings one tube back from the far side. Kopertowski, Lillestolen and Hudson arrive at sump. Three dry tubes are made ready. Jewell and Kopertowski take one tube each and all divers swim through sump where Mallinson meets them. Kopertowski returns for final dry tube of gear. Five divers sleep at Camp 6.

13/3/13 (Wed)—Nicola Radio connection established between Camp 3 and Camp 6. Mallinson's kit is carried to Sump 9 and the route rigged with several sections of new rope and some new bolts placed. To avoid carrying gear through Adams Avenue Mallinson dives Sump 7 and finds that the underwater passage is passable. The other four meet him on the far side and carry gear to Sump 9. Mallinson makes a dive in Sump 9 whilst the others check out leads in Adams Avenue and around the Río Iglesia waterfall. Mallinson has already

discovered a bypass to the climb, but above the waterfall the passage soon chokes. Mallinson returns from Sump 9 and reports that he has reached -30m but bad visibility has made it difficult to locate the way on. On the near side of sump Roe and Trowbridge rebolt route to Anthodite Hall.

14/3/13 (Thurs)—The team carry Jewell's dive gear to Sump 7 where he also dives through to avoid carrying kit through Adams Avenue. Jewell then makes a short dive in Sump 8 to see if there is any underwater passage which can be followed but everything is choked with boulders. Jewell then starts a fresh dive line in Sump 9. Following the right hand wall a depth of -48m is reached before the passage starts to ascend. At -30m the left hand wall comes into view and the passage narrows and becomes silty. It doesn't look like the main way on but Jewell decides to see where it goes and after completing decompression of 10 min at -6m surfaces in a mud floored ascending tube. With some difficulty the ascending tube is followed up several steep slopes to some breakdown chambers before the return dive is made. At -30m an attempt is made to locate the main way on but poor visibility hampers this effort. In the meantime the other cavers have explored some short passages in Adams Avenue and begun to survey a large inlet passage just prior to the low air space swim, whilst Mallinson has located a previously overlooked passage in the chamber above Sump 9.

15/3/13 (Fri)—Mallinson investigates Jewell's dry passage and takes a short section of rope to make the climbs more manageable. However he finds no way out of the breakdown chambers at the top of the muddy slopes. The other cavers explore the passage leading off the Sump 9 chamber found by Mallinson the previous day. A junction is reached and one passage followed and surveyed. The passage ends at a



Jason Mallinson with dry tubes and other equipment at the downstream end of Sump 1 during the return from beyond the sumps. Photo by Chris Jewell.

Emily Zuber in passage in the old section of the cave. Photo by Elliot Stahl.

pitch which isn't descended but is recognised as dropping into Adams Avenue. Entire section of cave named So Long and Thanks for All the Fish. Various photos and video taken during the surveying and en route back to camp.

16/3/13 (Sat)—In an attempt to locate the way on underwater it is decided that both divers should dive at the same time. Mallinson lays a new line down the left hand wall whilst Jewell follows his line down the right hand side. At -45 Mallinson finds a large passage leading off to the left hand side. Mallinson lays line down the passage and Jewell follows. Both divers reach around 60m depth, 2 hour long dive. The rest of the team returns to the junction from the previous day and after several climbs up breaks out into large passage. Approximately 400m of cave is surveyed (Long Dark Tea-Time of the Soul). Upon returning to the junction it is decided that the pitch that drops into Adams Avenue should be rigged as it offers a bypass should Sump 8 back up and fill the approach passage. Kopertowski rigs this and the dry team descends into Adams Avenue then heads to Sump 9 to help Jewell and Mallinson.

17/3/13 (Sun)—Mallinson dives. Others continue to explore and survey. The Long Dark Tea-Time of the Soul continues until a short pitch is reached. Hudson rigs this and the passage continues on a much larger scale approximately 20+ m high before ending at another large pitch. Hudson rigs this and Kopertowski is the first to descend, being filmed by Jewell who has caught up. Unfortunately the pitch drops into known passage so a slightly despondent team starts to survey back and finds a drafting passage not spotted previously. This goes for approximately 200 m before ending at a pitch down into a large chamber. Lack of rigging gear and time (and an informed guess that the chamber was Adams Avenue) forced the team to finish at this point and return to Sump 9 to help Mallinson. (Later, data input showed the chamber to be into a new area of the system). Mallinsons dive reaches -81 m. Limit for trimix diluent so Jewell doesn't dive. Gear pulled back to near side of low air space swim by the divers. Then all carried back to Four Corners Lake or camp.

Week 4

18/3/13 (Mon)—Hudson, Lillestolen and Kopertowski head back through Sumps 1 and 2 first so that they can de-kit and clear the platform before Mallinson and Jewell return. Kopertowski takes one dry tube containing camping gear. Mallinson and Jewell follow several hours later after packing the remaining three dry tubes and packing up Camp 6. Jewell and Mallinson take photos in Sump 1 though the visibility was only around 3 to 4 m. Some fun was had transporting the dry tubes when the ballast rock fell from the load Mallinson was towing and a difficult time was then had for the rest of the journey. After depositing his load at the start of Sump 1, Jewell returned for the last dry tube of gear and was assisted out of the water by Mallinson. Kit was dismantled and packed at the sump ready for transportation the following day.



19/3/13 (Tues)—Jewell, Mallinson, Hudson, Kopertowski, Lillestolen, Roe, Sims, Walmsley, Graham and Trowbridge carry kit from sump to camp. Eginore and Tschannen arrive at Camp 3 and begin to take photos of lower section.

20/3/13 (Wed)—Jewell, Mallinson, Hudson, Kopertowski, Sims, Walmsley, Trowbridge exit cave. Vieira arrives and starts hauling loads out.

21/3/13 (Thurs)—Rest day for Jewell, Kopertowski, Mallinson, Hudson, Trowbridge, Walmsley, Sims. Graham and Roe exit cave.

22/3/13 (Fri)—Rest day. Lillestolen, Tschannen and Eginore exit cave.

23/3/13 (Sat)—620 Depot to 110 m pitch day of hauling for some whilst Jewell, Trowbridge, Sims, Walmsley go to Camp 3, filming on route. Ottewell, Blyth, Wilson, Clayton, Chapman and Woods arrive in San Agustín.

24/3/13 (Sun)—Jewell, Trowbridge, Sims, Walmsley take gear from camp to 620. Kopertowski, Roe and Graham take gear from sump to camp. Others on surface do 110 m day (Ottewell, Blyth, Wilson).

Week 5

25/3/13 (Mon)—All exit with multiple bags carried from camp to 620 and 110 m pitch. Others on surface do 110 m bounce day (Ottewell, Wilson, Chapman, Clayton, Mallinson).

26/3/13 (Tues)—Various people go to the 110m pitch (Wilson, Chapman, Clayton, Gannon, Norton, Hudson). Stahl arrives in San Agustín.

27/3/13 (Wed)—Last team (Wilson, Chapman, Clayton, Gannon, Norton, Hudson, Ottewell, Blyth, Vieira, Stahl) goes in to Camp 3. Just six diving bags left in the system plus ropes and camping gear.

28/3/13 (Thurs)—Camping team de-rigs Lower Gorge. Mallinson, Roe, Lillestolen, Kopertowski, Trowbridge go to various points from 620 upwards in the cave to take out bags. All diving bags now removed.

29/3/13 (Fri)—Upper Gorge de-rigged. Camp moved to -620 Depot.

30/3/13 (Sat)—Camping team surfaces.

31/3/13 (Sun)—Jewell, Roe, Trowbridge move all gear from 620 to bottom of 60 and de-rig.

Week 6

1/4/13 (Mon)—Kopertowski, Lillestolen de-rig to top of 110. Ottewell carries gear out to surface.

2/4/13 (Tues)—Team carries bags out from 110 m. (Wilson, Chapman, Clayton, Ottewell, Stahl).

3/4/13 (Wed)—Rest day. Team celebrates Connor's 21st birthday.

4/4/13 (Thurs)—Fools' Day Extension de-rigged. Roe and Trowbridge leave for home.

5/4/13 (Fri)—Clean and pack the diving equipment. Steele, Shifflett, Zuber and Miller arrive in San Agustín.

6/4/13 (Sat)—Take Jamie and Virgilio caving (Jewell, Ottewell, Blyth). Take the two Mazatec men to the first pitch in the Fools' Day Extension. Steele, Shifflett, Zuber, and Miller go in too and rig the historic route with the objective of rigging to Camp 1 (used in 1968) to look for leads. Hadn't brought enough rope to reach Camp 1; was one rope lacking. Looked around for leads.

7/4/13 (Sun)—Jewell and Kopertowski go to J2 to visit other expedition. Steele, Shifflett, Zuber, and Miller go back in San Agustín with more rope and spot a good-looking lead across the top of the last drop down into Camp 1. Stahl leads a bolt climb to this lead. Went down to Camp 1 and looked around in complex passages for a lead Shifflett thought he remembered.

Week 7

8/4/13 (Mon)—Steele, Shifflett, Zuber, Miller, Clayton and Chapman walked into Huautla using the ridge foot trail. Visited Maria Sabinas' house and were let into it. Steele gave a 20p donation. Went to an Internet café where Steele e-mailed Bill Mixon in Austin, and he sent plan view maps of the Canadian's map published in the *Canadian Caver* which Steele printed at the café. Bought good tequila (Corraleo blue) and back at San Agustín drank, and Stahl played guitar and others sang along with him. Ottewell and Blyth had gone into San Agustín to the Camp 1 area and said they got into some nice passages worth returning to.

9/4/13 (Tues)—Garza arrived having ridden buses from San Marcos, Texas, in 22 hours. Ottewell, Blyth and Wilson got in first and explored in their dug out crawl. They said they had come to the top of a deep shaft and a lot of passage. Steele, Zuber, Stahl, and Shifflett went across the bolt traverse that was already rigged and the passage went nicely and for about 400 m to an end.

10/4/13 (Weds)—Rest day. Late afternoon Shifflett, Stahl, and Steele hiked to find an archaeological cave and see if the artifacts are still there. The vegetation had changed to lots of briars and very thick and the cave wasn't found. On the return hit the road halfway between San Andrés and San Agustín and a cab stopped with Jewell and Kopertowski in it who were returning from J2. Caught a ride to San Agustín.

11/4/13 (Thurs)—Stahl, Zuber, Shifflett, and Miller into San Agustín on their last trip. Set 26 survey stations in the passages dug out by Ottewell, Blyth, and Wilson. With the aid of the maps sent by Mixon saw that had reached the top of the Fishure pit series. Steele and Shifflett also recognized it looking down with a Scurion. Derigged on the way out. End of expedition dinner back in San Agustín with tacos cooked by Jaime.

12/4/13 (Fri)—Miller to go to Oaxaca to fly back to the States. Steele, Zuber, Stahl and Zuber hiked to Sótano del Río Iglesia to take photos. Saw vampire bats. Took photos of a nice pot found in 2007 and not touched. Packed van.

13/4/13 (Sat)—Everyone said their goodbyes and left for the States.

- 1,774 meters of dry passage found beyond Sumps 1 and 2
- 440 meters of Sump 9 surveyed
- 519 meters of new cave found in "old route"
- New depth of Sistema Huautla 1,545 meters
- Eleven days maximum stay underground during 2013 expedition
- Approximately 1700 meters of rope and 250 mallions used and 115 new bolts placed to reach Sump 1.

DIVE REPORTS

Jason Mallinson and Chris Jewell

These first appeared in the *Cave Diving Group Newsletter* number 188, July 2013.

4 March 2013

Diver Jason Mallinson; support Tim Allen, Martyn Holroyd, Pete Ward, Mark Wright. Following a sterling effort by all involved, the cave was rigged down to Sump 1 in quick time, with one set of dive gear following just a day later. As informed by PW there is no dry land near the sump for kitting up and whilst PW got on with installing the small suspended platform we had brought, JM perched his KISS rebreather on a small rock some 6 inches above the swirling water at the top of the last cascade. Here a precarious re-build of the rebreather was carried out. Just as the KISS had been rebuilt PW informed JM that the platform was ready for use. Unfortunately one vital item of the rebreather had been left at Camp 3, the mouthpiece and hoses, and so an ascent back to camp was required. Some 3 hours later (after a meal) JM returned to Sump 1 alone and completed the assembly

of the rebreather. Once all the kit had been lowered down the cascade, the suspended platform was used to change into the drysuit. There is a long lake leading off from the bottom of the cascade, and after a swim around a corner the roof lowers to water level, and JM tied off the dive-line to begin the dive. In the shallow tunnel ahead the water was murky (4 to 5 m visibility, probably due to cave traffic, which wasn't a problem initially, but after 90 m, when the depth increased to 15 m, route finding was not so easy. Odd remnants of previous expeditions were found along the floor of the large passage, and using these as a guide and old aluminium platform poles, also found in the sump, as belays, JM managed to negotiate the correct route through the deeper (-25 m) part of the sump. After 250 m the passage rises and the walls can both be seen, which made progress easier, and the continually rising tunnel eventually led after 400 m to Rolland Airbell. The airbell was not as described by previous explorers; the sandbar had disappeared and there was no dry land at all, just a large, long, deep-water airbell. At the far side of the airbell, the old



Jason Mallinson at the upstream entrance to Sump 1 with a well-loaded dry tube. Photo by Chris Jewell.

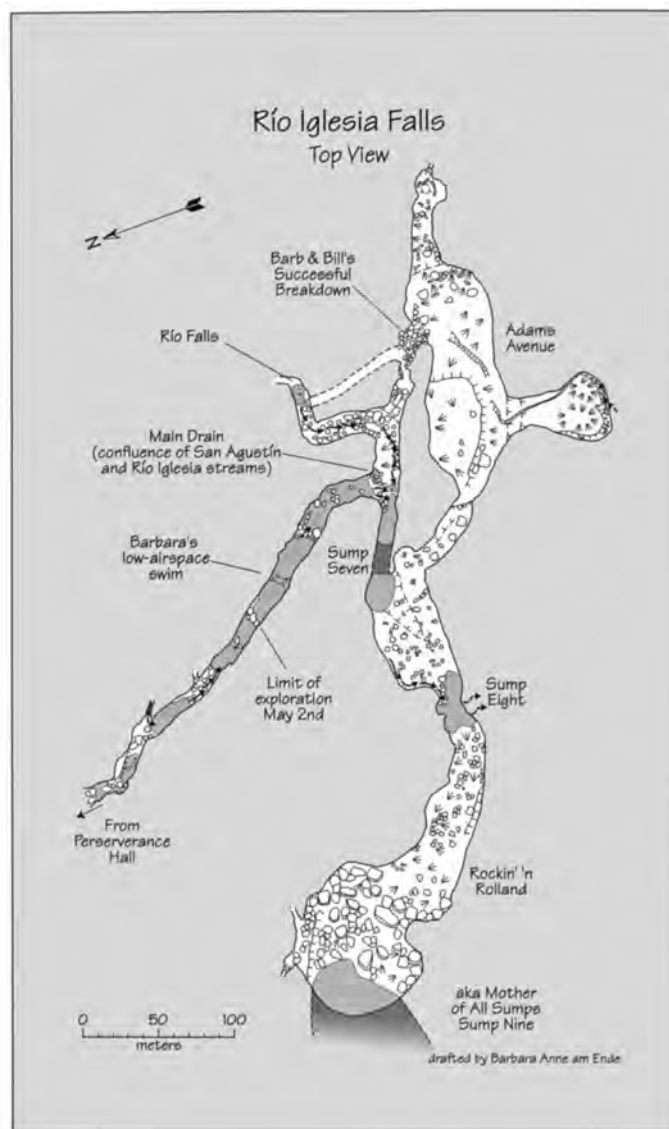
line of 1994 was found, and JM installed a new line alongside this into Sump 2. After around 100 m an old line reel tied into the old line was seen and left in place. Continuing in the large shallow tunnel, some 10 minutes later JM surfaced after a total dive of around 600 m (S1 and S2) in the large borehole found by the 1994 explorers. The diver de-kitted and went for a look down the passage. Some 20 m away, an old Acurex cylinder was found wedged between boulders along with its regulator and pillar valve. JM traveled as far as Sump 3 before overheating halted any further progress and he returned to the sump. Another Acurex cylinder was found just beside the sump pool almost fully buried in the gravel. A dive bag and slate were also found attached to this. The dive back through S1 and S2 was completed in around 30 minutes, checking the new dive line was installed well and suitable for the other divers to follow when the main push was to happen. Back on the near side of Sump 1 about an hour was spent stashing all the dive kit on ledges and tying it down, as it would be in place for over a week until the other cavers had

transported the rest of the dive kit down the cave and prepared everything for the pushing trip. A long day was completed by the ascent back to Camp 3.

11 March 2013

Diver Jason Mallinson; support Mike Bottomley, Tom Baker, Andy Kuszyk. The diving phase of the expedition was now ready to begin, and this would involve getting all the equipment to sustain five divers for seven to eight days beyond Sump 2. Four specially developed dry tubes had been brought to Mexico for transporting the dry equipment such as food and sleeping bags through the sumps. These dry tubes require balancing and making neutral in the water for ease of manoeuvring, and much time is necessary to achieve this. The team had determined that six tube-loads of equipment was required, and this meant two trips each through the 600 m sumps for the three rebreathers divers. JM had prepared one tube the night before and so set off early into Sump 1 with the tube. Around 40 minutes later the diver and tube had reached the 1994 extensions, and JM deposited the tube and headed back for another. MB, TB, and AK assisted the diver with the second dry tube, and once all the heavy kit was down at sump level they headed back to camp. Final preparations were then made by JM to ensure everything was taken that was needed for the initial 24 hours beyond the sumps. The second dry tube, which had by now grown to gigantic proportions, with wellies and wetsuits hanging off, was slowly towed through the sumps. Once at the far side of the sumps, JM de-kitted, emptied both dry tubes, and prepared one for collection by the following divers the next day. This involved filling the tube with large rocks and then trimming it on the outside with more to balance it and make it neutral. The old Camp 6 was found a few minutes down the large passage, and this seemed ideal for the first night's camp at least. A very pleasant and warm night was spent at Camp 6, and the diver also began transportation of some of the dive equipment required for the exploration of Sump 9. This was carried as far as Four Corners Lake; some of the old 1994 ropes were still in situ on a couple of climbs on the way.

The next morning JM rose early, and with at least four hours to wait until the other four divers would be coming through he decided to recon the cave as far as Sump 9 if possible. A rapid descent of the cave was made using the survey notes of the original explorers, and S9 was reached around 2 hours later. The diver was suitably impressed with the size of the sump pool. On the return through the boulder choke a side passage that had been noted on the survey notes was looked at to see if transportation of dive kit through it would be easier. This side passage emerged at the top of the Río Iglesia waterfall, rather than at the bottom as expected, thus removing one of the major objectives of the expedition! The continuing upstream passage was left for the other divers to fully explore. JM then headed back up to Camp 6 to meet the other divers who should have been coming through. On arriving back at Sump 2, he found that C. Jewell had deposited another dry tube and taken the empty one back, with a note



Detailed plan of vicinity of Sumps 7, 8, and 9 and the Río Iglesia waterfall from the 1994 expedition. Map by Barbara am Ende, *Beyond the Deep*, p. 284.

Jason Mallinson after returning from a dive in Sump 9. Photo by Chris Jewell.

left informing JM that the rest of the divers should all be diving through that night.

12 March 2013

Divers Chris Jewell, Mike Kopertowski, Jon Lillestolen, Rich Hudson; support Conner Roe. One dry tube had been packed with camping kit the evening, before so CJ kitted up on the dive platform with assistance from CR and swam through S1 and S2 to deposit the tube. JM had left one empty tube already weighted with rocks, which CJ then brought back. Shortly after CJ arrived back at dive base MK, JL, and RH appeared, and the three remaining tubes were packed and weighted. CJ and MK took a tube each through S1 and S2. MK then returned for the final tube of camping gear. CJ and MK both dived on closed-circuit rebreathers, whilst JL and RH used two 10 liter steel bottles and one 9 liter composite stage each. All five divers slept at Camp 6 for six nights.

13 March 2013

Diver Jason Mallinson; support Chris Jewell, Mike Kopertowski, Jon Lillestolen, Rich Hudson. Now that all the divers were camped beyond Sump 2, the plan was to transport enough dive kit for JM and CJ to Sump 9 for a series of exploratory dives. This first day was devoted to transporting JM's kit to the sump, and following three hours of portering, with some extra rigging on the way, the team arrived at Sump 7. Although Sump 7 had never been dived and there is a bypass through a boulder choke to Adams Avenue, it was decided that an easy underwater route would be much preferable to an awkward carry through a boulder choke, especially with delicate rebreathers. Some time was spent preparing the cylinders, getting the rebreather ready, and donning a drysuit. The dive itself was a relatively easy swim of 40 m through a large and shallow sump, surfacing exactly where we deduced it should, some 100 m upstream of Sump 8. Whilst the four porters travelled round via the boulder choke, JM began carrying the rebreather down to Sump 8. A short swim across this sump pool leads up a massive boulder pile to an enormous chamber with Sump 9 lying at the base of this chamber. Once all the dive kit had been moved to Sump 9, a descent of the vast black lake was made in terrible visibility. Despite searching around, the diver did not find better visibility, and he managed to fumble a sloping descent to 30 m depth with no real impression of the passage size or shape.

14 March 2013

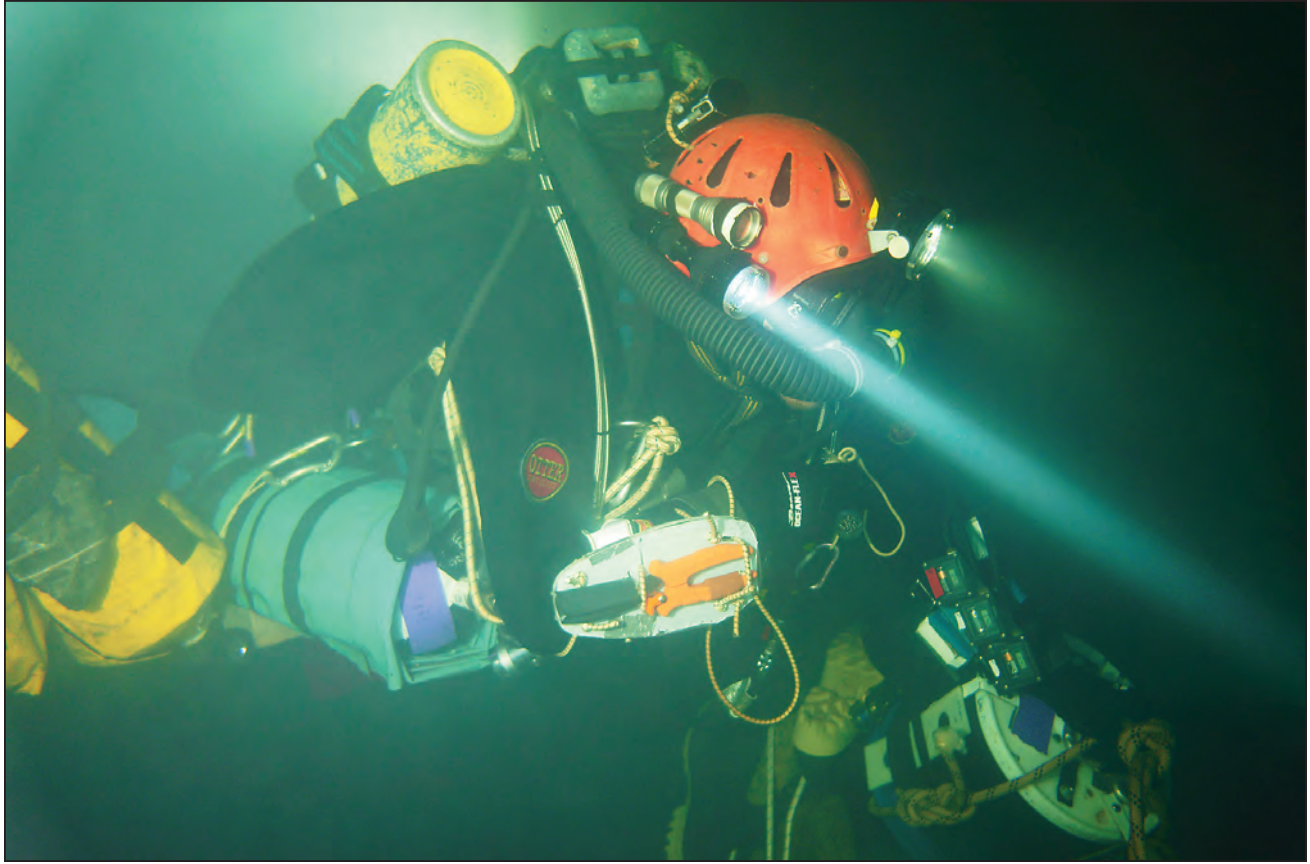
Diver Chris Jewell; support Mike Kopertowski, Jon Lillestolen, Rich Hudson, Jason Mallinson. This day was mainly spent transporting CJ's dive kit down to Sump 9. CJ kitted up at S7, dived through, then walked with kit on down to S8. Here a brief examination of the sump pool determined there was no way on and that the water simply ran down through boulders. CJ was then assisted down the cave to S9 for a dive. Rather than follow JM's, line CJ laid a new line from the surface following the right-hand wall steeply down. At -48 m the elbow of the sump was passed



and a gradual ascent begun. At -35 m a left-hand wall came into view and the floor of the sump was very silty. After completing decompression, CJ surfaced in a static sump pool with a steeply sloping muddy tunnel leading upwards. The dry cracked-mud floor was difficult to climb, but by kicking steps the diver was able to follow the tunnel for around 50 m up several steep climbs. The cave passage appeared to open out above, so CJ returned to the sump pool. At -35m the diver made an investigation of the sump to see where the main continuation had been missed, but poor visibility made this very difficult.

15 March 2013

Diver Jason Mallinson; support: Chris Jewell, Mike Kopertowski, Jon Lillestolen, Rich Hudson. Two ropes and caving gear were taken by JM through the sump to enable him to ascend the slippery slopes and rig ropes for a more controlled descent. The intention was to de-kit from the drysuit at a suitable point to allow for a more comfortable exploration of the passage found by CJ. Getting out of the water with the rebreather on and ascending the mud slope to the point where CJ had staged his rebreather was a big effort, and a pair of ice-axes would have proved perfect for this. Once the rebreather had been removed,



Jason Mallinson carries dry tube and other supplies through Sump 1. Photo by Chris Jewell.

progress was not too much easier due to the wet and slippery drysuit boots on the hard-packed mud. After a couple of climbs and just before the limit of CJ's exploration, a suitable boulder was deemed the best spot to de-kit from the drysuit. Continuing in shorts and wellies, JM emerged from the rift passage into a larger tunnel running to the right and left. The right-hand passage was followed initially, descending for some 100 m down steps to a small pool that was gauged to be at the same level as the main sump. The left-hand passage was followed for only 20 m until a mud blockage filled the entire tunnel. No other leads were discovered, and the diver realised that this was not the main route and that the main continuation of the cave lay underwater, probably somewhere around the 50 m deep elbow. JM returned to base after three hours away.

16 March 2013

Divers Chris Jewell, Jason Mallinson. A new strategy was devised for this dive to get the best from the poor visibility in this large sump. JM was to dive along the left-hand wall, searching all the alcoves and rifts, whilst CJ was to do the same along the right-hand wall. After setting off into Sump 9 together, JM and CJ split at the 20 m deep point and kept within sight (just) of each other as they progressed along their respective walls. Not far after the 50 m elbow JM noted some unusual erosion features on a flat part of the wall/floor, and sure enough the left-hand wall then turned down a large passage. CJ, seeing what was happening,

then crossed over from the right-hand wall to follow JM down the newly discovered main route. The large passage stayed around 45 m depth for a while, but then the depth began to increase and at 200 m into the sump the depth was 60 m on the roof. CJ turned to begin surveying out, whilst JM found a suitable tie-off point on a roof flake. Both divers then surveyed back to the decompression point and spent around 30 to 45 minutes decompressing. Dive times were around two hours.

17 March 2013

Diver Jason Mallinson. JM was to make the next dive, and if the sump was still continuing at a reasonable depth CJ was to follow up with a further dive, using a second rebreather for more redundancy. Beyond from the limit of the previous day the tunnel continued to descend at a steady rate. A wide, perfectly flat roof was followed along a tunnel some 5 m or more wide and 6 to 8 m high. A good impression of the passage was not possible due to the visibility. Nor was it possible to ascertain if there were any side tunnels. At 440 m into the sump the depth reached was 81 m, and due to the mounting decompression and the limit of the trimix gas carried the diver tied off the line and began surveying back. The tunnel continues large beyond this limit, and the diver postulated, based on the dip of the roof, that the sump would reach 100 m (or more) quite soon. Following a chilly decompression the three-hour dive was completed with a niggling shoulder pain. Whilst constant, the pain did not increase,

and JM had no intention of getting back beneath the surface when already cold to try and relieve it. Some time on surface O₂ and a bit of resting seemed to relieve the problem.

18 March 2013

Divers Chris Jewell, Jason Mallinson, Mike Kopertowski, Jon Lillestolen, Rich Hudson. RH, JL, and MK headed back through S1 and S2 first so that they could de-kit and clear the platform before JM and CJ arrived. MK took one drytube containing camping

gear. JM and CJ followed several hours later after packing up Camp 6 and packing the remaining three dry tubes. CJ and JM took photos in S1, though the visibility was only around 3 to 4 m. Some fun was had transporting the drytubes when a ballast rock fell from the load JM was towing and a difficult time was then had for the rest of the journey. After depositing his load at the start of S1, CJ returned for the last dry tube of gear and was assisted out of the water by JM. Kit was dismantled and packed at the sump ready for transportation the following day.

BIBLIOGRAPHY

History

- Steele, C. William, 2009. *Huautla: Thirty Years in One of the World's Deepest Caves*. Cave Books, Dayton, Ohio. 269 pages.
- Stone, Bill, 1995. History of Huautla Exploration. *AMCS Activities Newsletter* 21, pages 17–30.
- Stone, William, and Barbara am Ende, 2002. *Beyond the Deep: The Deadly Descent in the World's Most Treacherous Cave*. Warner Books, New York. 351 pages. (The 1994 expedition.)
- Stone, William, and Barbara am Ende, 2004. *Más Profunda que el Abismo: Un Mortal Descenso en la Cueva más Peligrosa del Mundo*. Random House Mondadori, México D.F., 392 pages. (Spanish translation of *Beyond the Deep*.)

Articles

- Espinasa, Luis, in prep. Nicoletiids in Huautla. *Speleobiology Notes*.
- Garza, Ernie, and Jon Lillestolen, 2012. 2012 Huautla Expedition, Oaxaca, Mexico. Program book, 2012 NSS Convention, page 84 (abstract).
- Glanville, Peter, 2013. Taking on the Mother of All Sump: The 2013 Huautla Expedition. *Belfry Bulletin*, January, no. 549, p. 13–32. (Based on a presentation by Chris Jewell.)
- Hoover, Pierce, 2013. Cave Depth Record Achieved Using KISS Rebreather. *Underwater Journal* (www.underwaterjournal.com, 29 November).
- Jewell, Chris, 2013. 2013 Huautla Expedition. *AMCS*

Activities Newsletter 36, pages 49–53.

- Kopertowski, Mirek, 2013. System Huautla. *Jaskinie* 71 (2013 no. 2), pages 9–13 (in Polish).
- Mallinson, Jason, and Chris Jewell, 2013. Dive Reports. *Cave Diving Group Newsletter* 188, pages 18–22.
- Mallinson, Jason, and Chris Jewell, 2014. Diving in Sistema Huautla. *AMCS Activities Newsletter* 37, pages 87–92.
- Steele, Bill, 2013. Caving near Camp 1 of San Agustín, Sistema Huautla. *NSS News*, November, pages 4–7, cover photos. Reprinted *AMCS Activities Newsletter* 36, pages 54–55.
- Steele, Bill, 2013. Resumed Exploration of Sistema Huautla, Oaxaca, Mexico. Program book, 2013 NSS Convention, page 51 (abstract).
- Stenner, Christian, 2013. Huautla: Sótano de San Agustín, Part One. *Canadian Caver* 78, spring, pages 29–32. Reprinted as Canadians in San Agustín in *AMCS Activities Newsletter* 37, 2014, pages 82–86.
- Vieira, Nicholas, 2013. Huautla: Sótano de San Agustín, Part Two. *Canadian Caver* 78, spring, pages 33–36. Reprinted as Huautla 2013, in *AMCS Activities Newsletter* 37, 2014, pages 93–95.

Videos

- Chris Jewell. *Huautla Cave Diving Expedition Presentation* [to caving club in Austin, Texas, 17 April 2013]. <http://www.youtube.com/watch?v=aM4vh6zvBpk>. 1:08:19. (PowerPoint presentation assembled with audio recording by Terry Holsinger.)
- Mark Sims and Chris Jewell. *San Agustín 2013 Caving Expedition*. <http://youtu.be/iajDjEX6jqY>. 6:48.



Rich Hudson assists Jason Mallinson in Sump 9. Photo by Chris Jewell.

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SPONSORS

Dive Life:
Major scuba-diving
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Otter Drysuits:
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KISS Rebreathers:
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rebreathers, underwater
breathing equipment that
recycles divers' air.



Vango: Manufacturer
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NSS: The National
Speleological Society is the
national caving body in the
USA.



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Trust:** A charity that was
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perpetuate the memory of
the Transglobe Expedition.



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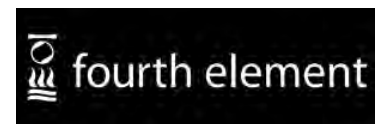
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