



THE DEATH CORAL CAVER

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No. 2 October 1992

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The **Death Coral Caver** is published by the Proyecto Espeleológico Purificación, a non-profit organization incorporated in the State of Texas. The PEP is dedicated to the study and exploration of the caves and karst of the Purificación Karst Area in the states of Nuevo León and Tamaulipas, México. Articles from the **Death Coral Caver** may be reprinted in other not-for-profit publications with proper attribution. Any material relating to the Purificación Karst Area is welcomed for publication. Membership in the PEP is available to interested individuals who share the project's goals of careful caving. Annual dues are \$15 per year for individuals. Corporate or institutional memberships are \$100 for a 5-year term. Members will receive newsletters as they are published, and may vote in elections of the Board of Directors.

PHOTO CREDITS

Front Cover - Jed Mosenfelder on the Moonmilk Traverse in Sótano de la Cuchilla. 1991 photo by Peter Sprouse.

Inside Front - Jed Mosenfelder in Cueva Magnolia. 1991 Photo by Peter Sprouse.

Back Cover - Nick Morales rappelling the 108m free drop into El Hundido. 1973 photo by Jack Conklin.

EDITORIAL

The past year since the inaugural issue of the **Death Coral Caver** has been a good one for exploration in the Purificación karst. There have been regular forays into all corners of the area, extensions in major caves and the discovery of a major new one, Paraíso Difícil. By all indications next year holds promise of greater discoveries. In addition to the recent expedition reports in this issue, you will find a look back at the earliest caving in the Purificación area. John Mikels provides an overview of the pioneering work of the Pan American Speleological Society in the early 1970's.

The project has made good progress on the organizational front. In addition to launching this newsletter we established project membership, which now numbers over 60. The PEP has been granted official non-profit status by the IRS, making all contributions to it tax-deductible. Any contributions, material or monetary, will help the project pursue its goals of cave exploration, documentation, and preservation.

New to this issue is a new section, Cave Descriptions. This will be a place to present data on various caves throughout the Purificación Karst Area. We welcome contributions to the **Death Coral Caver** in any form.

Peter Sprouse

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TECOLOTE: 1991

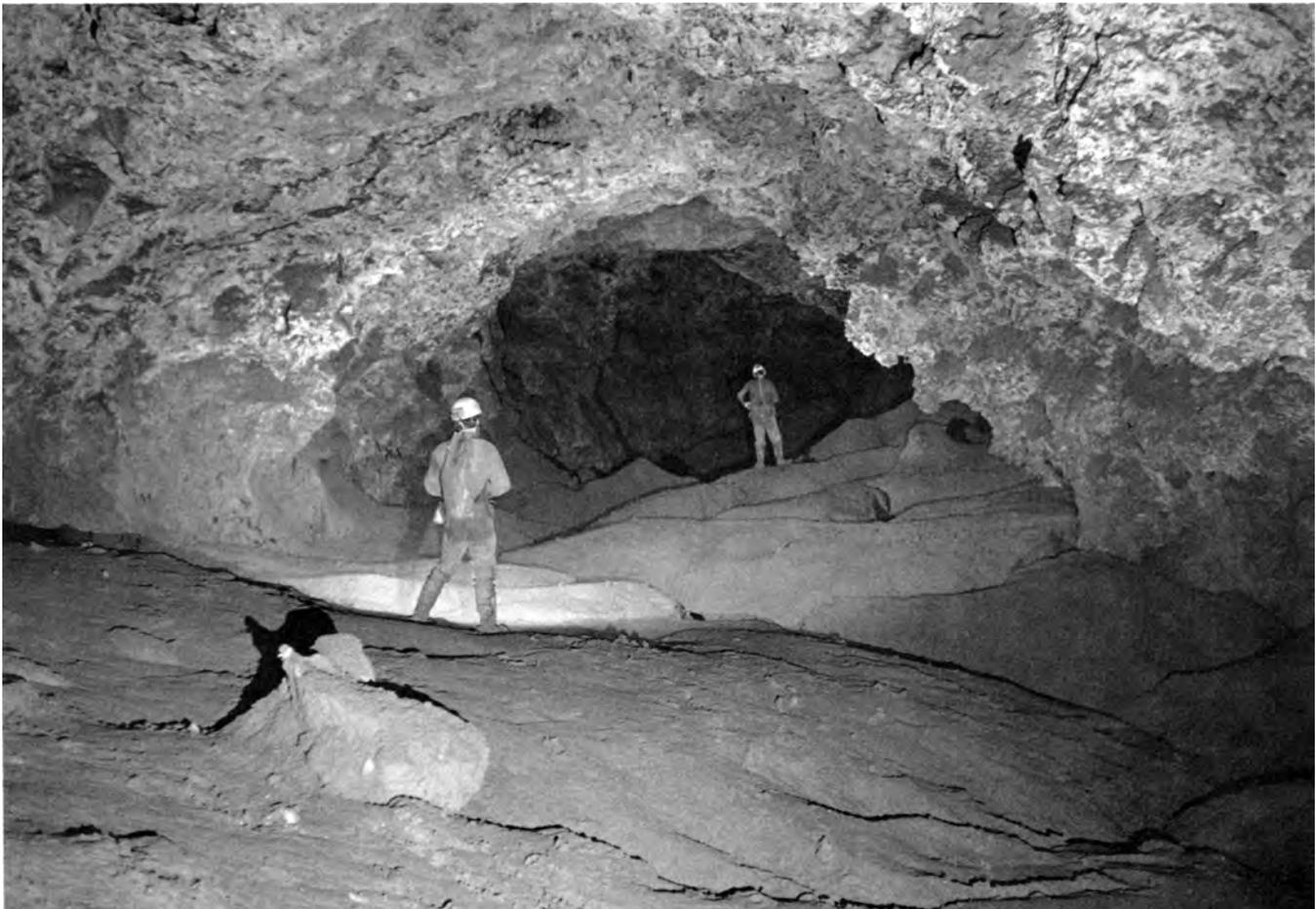
by Peter Sprouse

The 1990 expedition to Cueva del Tecolote left the PEP cavers with high expectations for 1991. With a small crew we'd been able to explore a remote and large new section of the cave called Megaland, and with good leads remaining, the establishment of Camp II in this area was clearly called for (see *Texas Caver* Aug. 1990). Tecolote was 20,796 meters long, 258 meters deep, and seemed poised for major a breakthrough toward the presumed resurgence, which was still 10 kilometers distant and 400 meters lower.

The crew for the 1991 effort had been carefully gathered over the previous year. These 13 cavers were Val Ellis, Ray Keeler, Jack Kehoe, Peter Quick, Scott Scheibner, Peter Sprouse, Cyndie Walck, Jack "Solo" White (all from USA), Jon "JJ" Beavan, Paul Ibberson,

Dave Savage (all from UK), Dale Chase, and Steve Grundy (both Canadian). Eleven of the team gathered in Austin on 1 March and drove south in three four-wheel-drive trucks, one of which was kindly loaned by Bill Mixon. In Cd. Victoria Dave and JJ joined up, having flown into Mexico City and bussed north. Despite a bit of vapor-lock trouble with Ray's truck, the steep mountain grade was successfully climbed before dark.

The first job of the expedition was to rig the cave and to take some gear partway back to camp. After soaking up the morning sun on 3 March, everyone loaded duffles and rigged down the Tecolote entrance series, picking up stashed supplies at Camp I. The Mud Funnel just before Nonad Lake was reached after



Paul Ibberson and Jon Beavan light up the Forking Borehole near Camp II. 1991 photo by Peter Sprouse

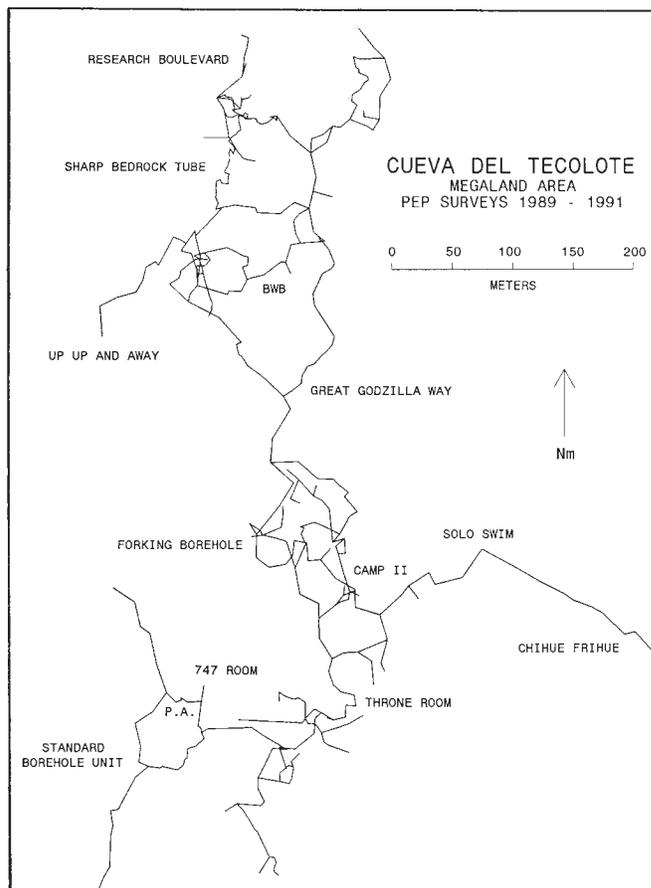
7 hours travel and the gear was left there. Everyone straggled out, regaining the surface after 11-16 hours. The wind howling down the wet entrance series was particularly cold that night, and wetsuits froze as soon as they were doffed. A subsequent surface day allowed for serious duffle-packing, and that night the local villagers were treated to a slide show on their cave. Thanks go to Ray for hauling a generator all the way from Arizona for this event.

On 5 March the final duffle loads were packed up for Camp II. While most of us began the trek in, Cyndie and Peter Q. decided to wait out a day due to various mild illnesses. The journey out to the gear-drop near Nonad Lake went smoothly, and there our duffles were loaded further, with some spawning piglets. Through the swims and climbs of the Chihue Frihue the pace began to slow with fatigue. Once ashore in Megaland we made a search for the best campsite. Nothing suitable could be found in the Forking Borehole, so camp was established up a ladder climb in Easy Meters. Camp II was in a wide meandering canyon with a flat mud floor. This part of the cave is quite warm, and polypro clothing is hardly needed in camp.

MEGALAND MAZES

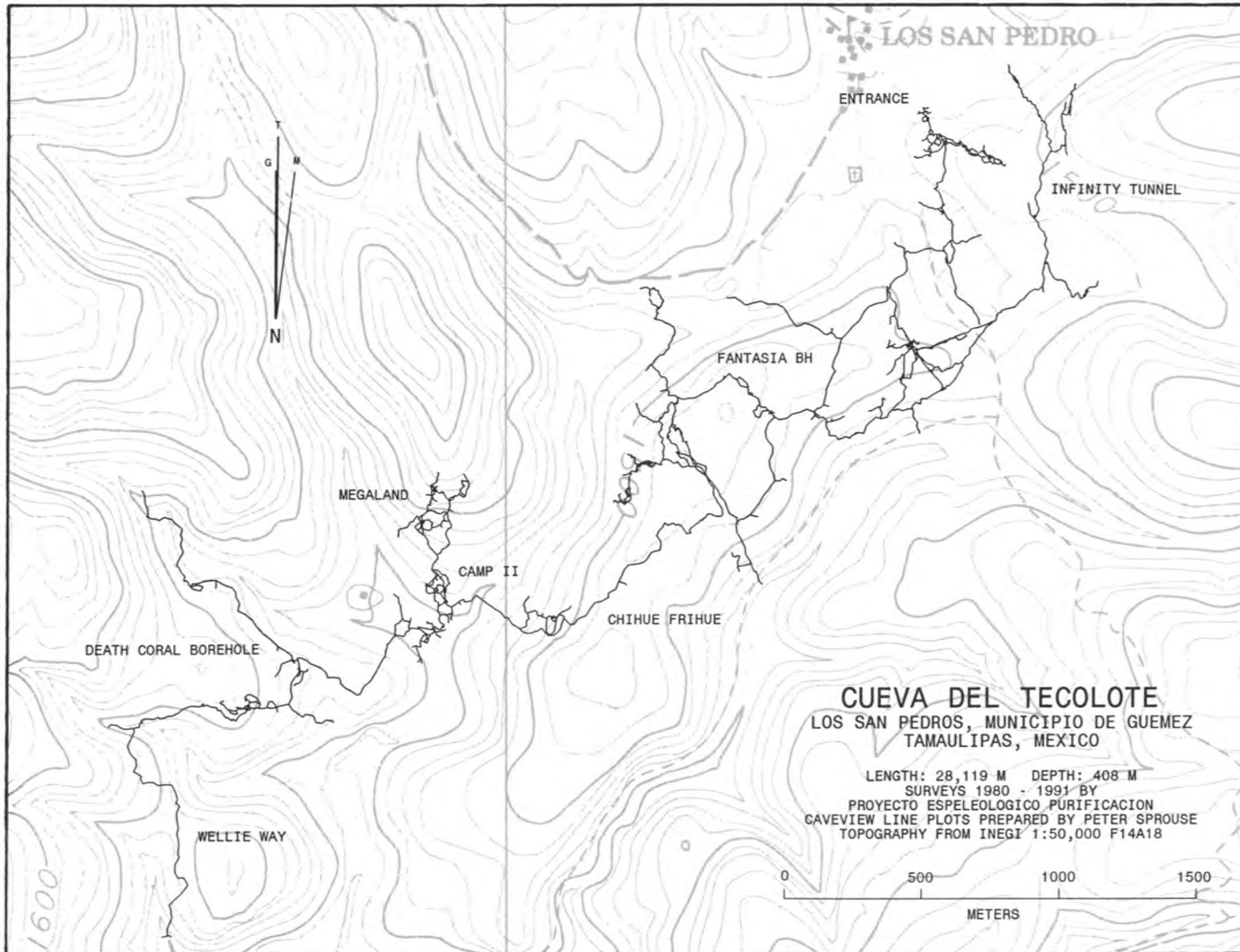
On Camp Day 2 (6 March) only two mapping teams were fielded, because Jack, Scott, and Val went back to the drop-off point to get gear, meeting Peter and Cyndie as they were coming in. Naturally the best leads were picked, the main upstream and downstream leads out of Megaland left from the previous year. Paul, Dale, JJ and I went north up the Forking Borehole to the Research Boulevard lead at the 183 Intersection. It went up for 50 meters to where we were stopped by a steep mudslope. A lower level took us through a complex Tamabra Formation maze (Research Maze) to intersect a large borehole. To the left we mapped about 100 meters of large passage to a drop, which probably connects back to the mudslope we'd just been stopped by in the Research Boulevard. To the right we climbed a flowstone slope to an overhung lead climb, with the borehole continuing above. This would have to be attempted later. Then we backtracked to the 183 Intersection, mapping a short loop and then a longer one, Little Bambi Way I and II. Our team's survey for the day was 407 meters.

Meanwhile Ray, Solo, Steve, and Dave headed downstream to the drop below the Throne Room. This short drop went immediately to a swim, and lacking wetsuits they retreated back to the top of the drop to



look at a crawl Ray had been in the year before, but it ended. Backtracking a bit more, they did the short climb up to the high borehole which had been mapped the year before, the King's Gallery. Solo checked a hole under a large breakdown block and hollered back "big, clean, and complex". They were back at the stream level in 10-meter-diameter passage. They mapped a series of mud-floored passages and a small streamway to a sump, but couldn't regain the main drainage. The only lead left behind was a wade to a body-size walking canyon. Another lead could be seen up a mud slope in the King's Gallery with a halogen lamp, but it would have to wait. Their day's survey was 323 meters.

On Day 3 three teams ranged throughout Megaland. Ray again led a downstream team which included Solo, Paul, and Dave. They went down the 13-meter drop below the Throne Room prepared for the water. In the downstream direction they shot two stations to a sump, with the only way on being a dome climb. The upstream route was accessed via a parallel climb-down next to the top of the 13-meter pitch. A 25-meter swim led to a flowstone choke with a dribble of water coming out of it. Back at the climb-down another downstream route was found, where Paul free-dove a



near sump. A short swim then led to a true sump. Dave squeezed through a hole above it for a few more shots, calling data back to Ray, who was perched on a dry ledge sketching.

Discouraged, they retreated to the King's Gallery, where Ray had noticed the high lead about 15 meters up the west wall. Paul climbed up easily and disappeared into a nice oval tube, No Mud Oval. The team mapped down a short handline to a T junction. The left way was the top of a pitch, while the right way went up to a large breakdown chamber, the 747 Room. Solo discovered this at 7:47 pm, and at first it indeed seemed large enough to hold a jumbo jet. After surveying it and finding no way on, Solo decided it was only big enough for a pair of Cessnas. So Paul ran back to camp, which wasn't far, and returned with a rope to check the pit. He landed in a complex area, leaving going passage with good airflow. They wrapped with 267 meters of survey for the day.

The other two teams went upstream in the Forking Borehole, diverging where a room off the left side of the passage split into an up and a down lead. Peter, Cyndie, Scott and I went to the right, the lower way. This led down a narrow rift to a T-junction. To the right the Spray Shot Passage went about 50 meters to a lake, which we declined to push. To the left we climbed up to a junction, where the right-hand lead tied back into the Forking Borehole. Cyndie followed the left lead up to a steeply ascending mudslope.

Returning to the Forking Borehole, we then chose a major lead up a slope which Jack had looked at the year before. This was named the Pyramid Passage for the mud dunes at the top of the hill. At a junction we found that the left-hand way led to the top of Cyndie's mudslope, while the right-hand way continued on as the Bold Woman Borehole ("where no man has gone before"). This passage led to several high windows overlooking a large passage which we suspected was the Great Godzilla Way. Leaving Peter there, Cyndie and I circled around up the Forking Borehole to the Godzilla, confirming and mapping the tie-in for a total of 388 meters of survey.

Meanwhile the other team, Jack, JJ, Steve, and Dale, had gone left into the upper lead where the others had gone down at the beginning of the survey. They made it partway up a dome climb before turning back. So they went a bit farther up the Forking Borehole to another up-lead, which soon connected to the top of the dome they'd been trying to climb. It also continued on - Up, Up and Away. They worked their way up several "death climbs" by carving steps. It eventually got too steep for them, but they could see



Val, Cyndie and Steve celebrate tying a loop into Camp. 1991 photo by Peter Sprouse

a large black void overhead, a promising flowstone lead climb for the future. Then they went back down the borehole toward camp and mapped up into the Crossjoint Lead, which led up to an upper-level passage mapped the previous year called Another Borehole. They crossed this passage, tied in, and went into another lead on the other side. At that moment I was entering camp, which was empty except for a sleeping Val. Hearing voices and realizing that Jack's team was coming out of the unexplored lead at the far end of camp, I yelled to them. That startled Val out of his slumber, who thought that I had come from the virgin lead. It was an amusing scene as the surveyors tied in the loop over Cyndie and Scott's sleeping bags. They ended up with 356 meters for the day. The total survey for the day was 1012 meters, carrying Tecolote past Sistema Cuetzalan into third place on México's long list.

By Day 4 the best upstream leads seemed to have gone up domes. So it was time to climb, although we had not brought in any gear specifically intended for lead-climbing. Two teams went to the climb at the end of Research Boulevard: Cyndie, JJ and me forming one and Peter, Steve, and Dale the other. The latter team prepped the bottom of the climb for me to lead using spare slings as runners. I made it up the sheer initial wall and found myself on a steep flowstone slope with a mud veneer. I called down for more webbing, and some footloops were pulled off ascenders and tossed up, enabling me to top out. With the rope secure JJ and Cyndie ascended, and we passed a short climb-up, only to encounter a more imposing one. A flowstone cascade bossed down from an inviting tunnel above, but with no more protection or rope, it would have to wait until the next expedition.

We retreated to the Research Maze to do clean-up

work in breccia porosities, eventually meeting up with Peter Quick's team, who had followed a lead off of the Forking Borehole into the maze (the Sharp Bedrock Tube). Our two teams got a measly 312 meters between them for the day, and the Tamabra breccia mazes of Megaland seemed to be playing out fast.

BREAKTHROUGH

Ray, Paul, Scott, Val, and Dave came into camp late like saviours: the Mother of all Boreholes had been found! They had pushed through the 747 Maze and intersected a 12-meter-diameter north-south trunk, the Standard Borehole Unit. They chose the left way, wide passage with occasional stooping in clean flowstone with airflow. They mapped steadily southwest, through decorated trunk with occasional flowstone downclimbs. After 400 meters the passage got bigger in massive breakdown as Ray's mind "turned to drive!" from high-speed sketching, so they stopped in the 40-meter-high Mother of all Boreholes (MOAB) with 605 meters in the bag. There was a 3:00 a.m. camp celebration over this stroke of good fortune. The day's total survey was 917 meters, but everyone looked forward to the prospect of doubling that the next day.

So on Day 5 everyone set off for the new borehole, 13 strong in 4 teams. Jack, Cyndie, and Val mapped the north (upstream) extension in the Standard Borehole, gaining 188 meters before it ended abruptly. That left their leapfrog team of Peter Q., Dale, and Steve (the Cave Eating Monsters) only a small side lead which looped back to the 747 Room, which they enjoyed so much that they named it the Porcupine's Arsehole. While Ray, Solo, JJ, and Dave continued where they had left off at the Mother of all Boreholes, Paul, Scott and I leapfrogged ahead down

"I think I'll send KLM some more airfare, this is too good of a deal."

the large trunk for several hundred meters to a T-junction. We set a station marked with arrows which read "you-us" and mapped into the left-hand borehole. This was a nice gravel-floored inlet with occasional pools and climbs. After 218 meters we were stopped by a swim, which Paul tried a dry wall-traverse around but fell off into the water, giving it the name Paul's Plunge. We returned to the You-Us Junction as Ray's Team tied in his 237 meters of survey down the MOAB. Some recruits from the upstream teams filtered down also, looking for work.

Ray, Scott, and Solo went back uphill to pursue a westward lead which Scott had seen. It turned out to be a straight and level trunk, 10 to 20 meters high and over 600 meters long. Here was the first true death coral (tower coralloids) seen in Tecolote, a common feature deep inside Cueva de Infiernillo to the north. Not far along they passed a trunk on the left side which was perched atop an 8-meter lead climb. They stopped in the Death Coral Borehole at a tricky mud climb-up. Solo climbed the lower part and reported that another tricky climb would be required to reach the continuation.

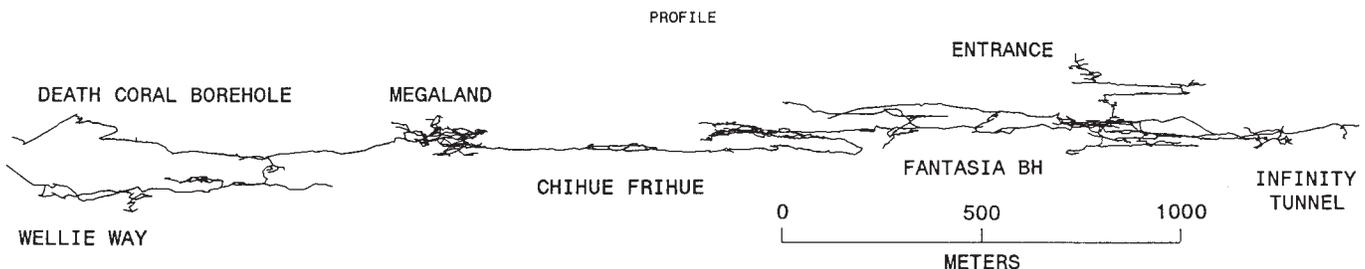
Meanwhile Peter, Steve, Dale, and Dave "Probe Unit" Savage had leapfrogged ahead of my team into the You-lead. These "Cave Eating Monsters" began their survey about 200 meters ahead at a lake, sparing our catch-up team the wade. They then followed a flowstone passage down and down, which they named The Drain. Finally it sloped up a fine ramp chamber, the Drutherhall (druther the whole cave was like this!). At the top of the flowstone slope it splintered into breakdown leads, so they quit for the day with 476 meters in the book.

Meanwhile Cyndie, Paul and I mapped down toward the Monsters leapfrog start, doing a nice borehole loop and going down a 6-meter drop. Just

CUEVA DEL TECOLOTE

LOS SAN PEDROS, MUNICIPIO DE GUEMEZ
TAMAULIPAS, MEXICO

SURVEYS 1980 - 1991 BY
PROYECTO ESPELEOLOGICO PURIFICACION
CAVEVIEW LINE PLOTS PREPARED BY PETER SPROUSE
TOPOGRAPHY FROM INEGI 1:50,000 F14A18



before the tie-in we looked at a nice infeeder on the right wall, but couldn't quite get into it without climbing gear. So we tied in the survey at Probe Pool and went back up the 6-meter drop to map up a big mud slope to the west. At the top was a nice passage which curved around to the left to a large mud funnel. At the bottom was only a small lead, but Paul made it up the far mud slope to a continuing borehole. As he was doing that I went back around to the top of the mud slope and found a passage (the Scud) joining him



Scott Scheibner in the No Mud Over, a breakthrough discovery. 1991 photo by Peter Sprouse

but couldn't get up to his level. On the lower level the Scud Passage split, with the lefthand way going to a small impassable hole in the floor of Paul's upper borehole. Reuniting at the mud funnel we mapped Paul's way, the Grandmother Borehole. The tape reeled out completely for a number of shots, and we quit where the borehole split into an upper and lower route. Our survey was 675 meters, and the day total was a welcome 2221 meters. Everyone dragged back

into camp tired and elated.

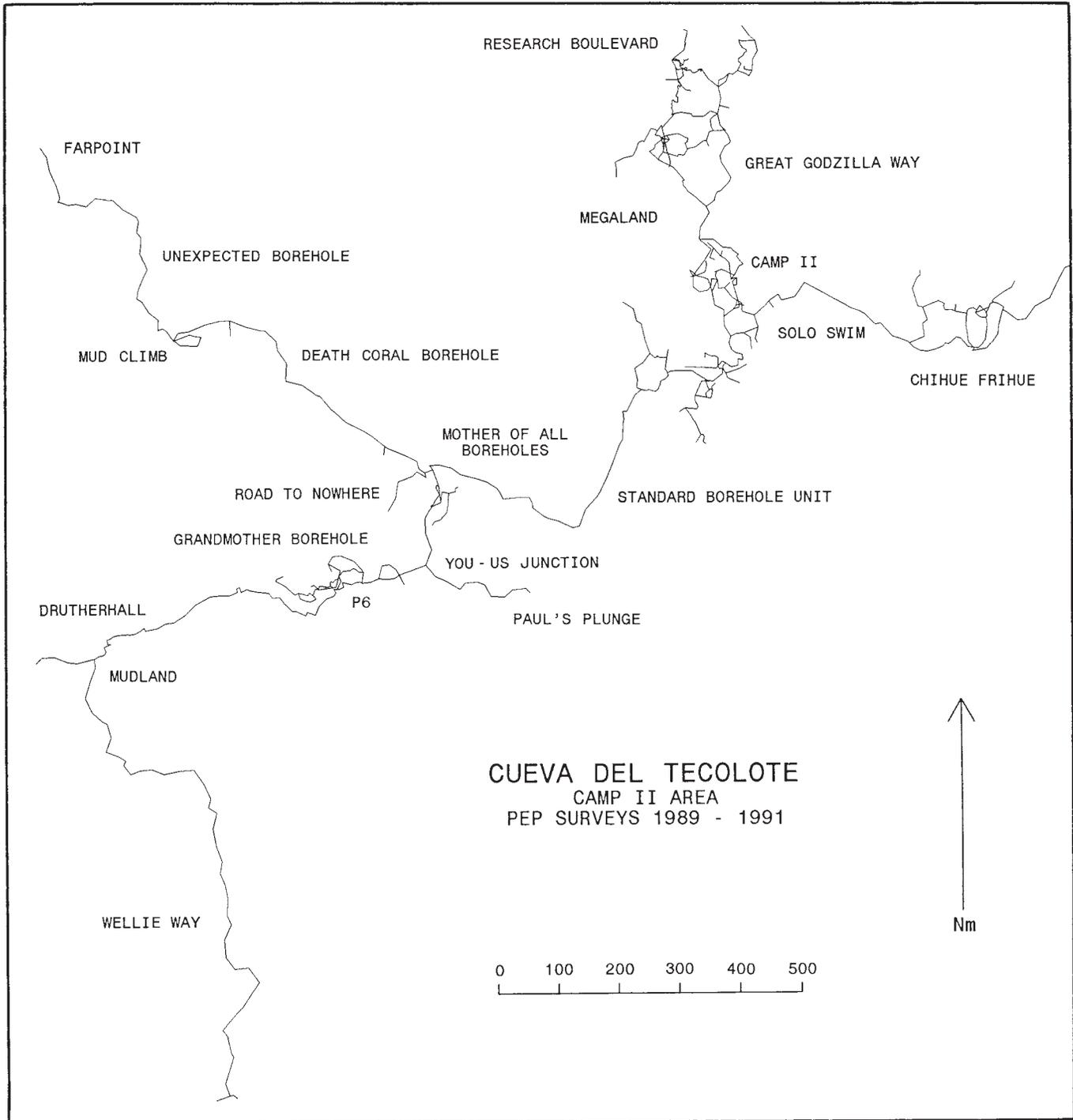
With the trips out to the new section already getting long due to rapid progress, a rest day was called. So Day 6 was taken up with gear repair, extended happy hour, and a card game with almonds for betting chips. I hand-plotted the surveys and we admired the bold new lines reaching into the unknown. Scott and I did go surveying - a 5.16 meter shot tying in a loop by camp. Realizing that while two mapping days remained there was only time for one big push, everyone rested well for it.

FINAL PUSH

Four teams filtered out of camp and down the Standard Borehole Unit. Cyndie, Scott and I shot photos, then mapped in the Scud Passage below the Grandmother Borehole. We tied into Jack, Dave, and Paul, whose down-lead off the Grandmother had ended in several sumpy pits. My team went back to the Mother of all Boreholes area and mapped two jughandles, Planktown and Obi-Wan Kenobi. Jack's returning team passed us and tackled a high lead over the beginning of the Death Coral Borehole. The Road to Nowhere didn't go far but was a nice large passage.

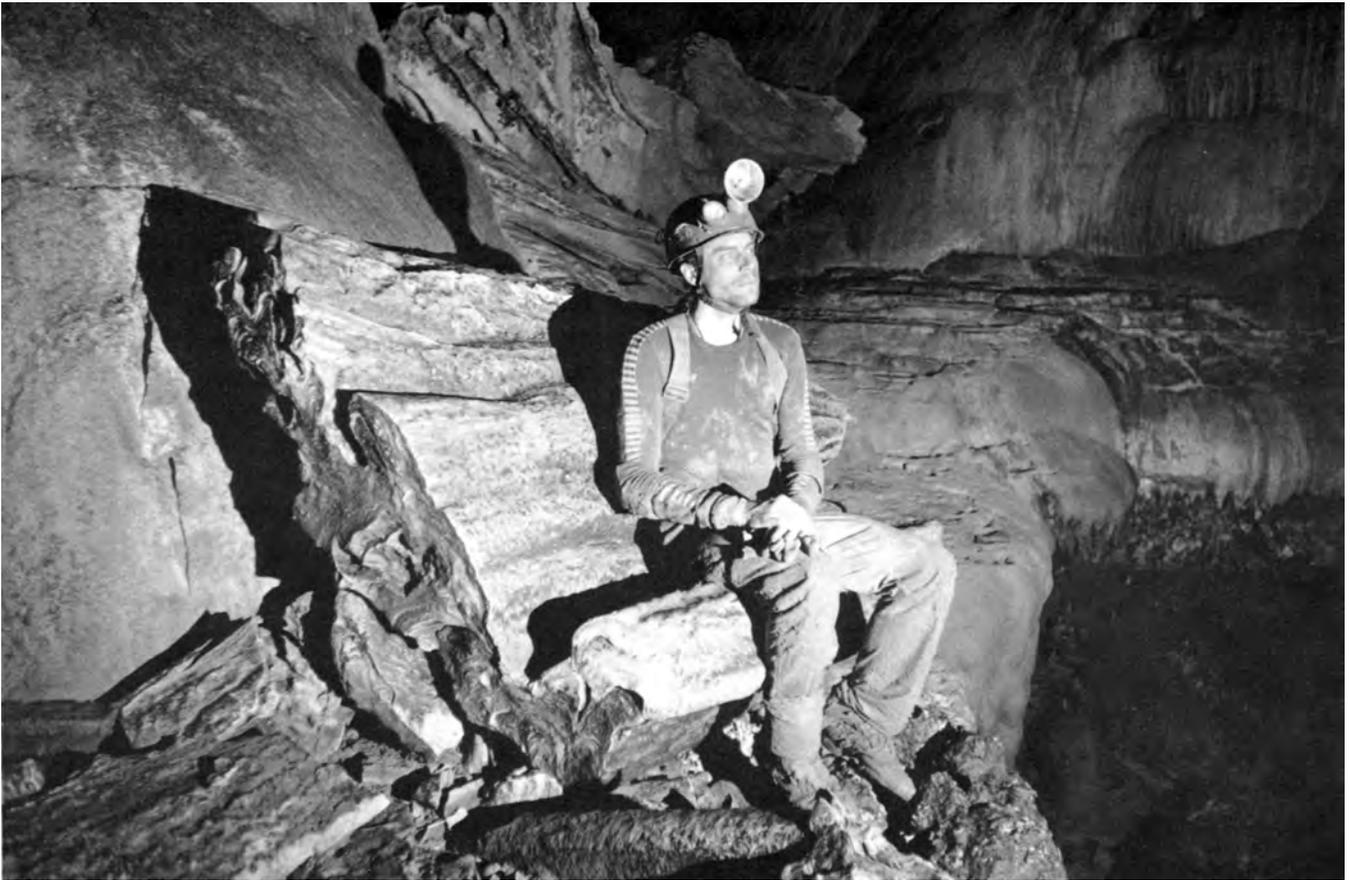
Scott and I were still primed, so we left banged-up Cyndie in the Death Coral Borehole and followed the footprints of Ray's team up the climb that had stopped them the day before. Once up the tricky climb we followed their stations through a complicated formation passage, the Formation Bypass. Then it opened up into a big descending passage, the Unexpected Borehole. While this passage had the usual deep silt covering the floor, occasional clean rock flakes fallen off the ceiling indicated that it hadn't flooded in a long, long while. Finally we made voice contact with Ray, Val, and Solo, much to their amazement. Scott and I set off down the steep breakdown slope to leapfrog them for an hour or so, climbing up into a westward infeeder borehole. We explored 100 meters to a lasso upclimb, then began the survey back, naming this remote place Farpoint Station. My team's total was 433 meters, Ray's was 532 meters, and Jack's was 261 meters. It took 3 hours to get back to camp from Farpoint, making it a 17.5 hour trip.

We found that Peter Quick, Steve, Dale, and JJ were still out, and they didn't drag in until several hours later. They had mapped an amazing 1294 meters in never-ending boreholes. First they had to penetrate a grim 60-meter-long breakdown pile, the Monster Caver Eating Crawl. JJ searched for an hour before popping out into a 4-way borehole intersection, which



they named Mudland. Peter checked a northeast borehole to see if it would come out on a balcony seen above the breakdown maze, but it didn't look like it would. Another northeast borehole was left unexplored. The third way was a steep mudslope which they mapped for 100 meters to the top, where it continued as a westward walking lead. But they chose the main south lead, the Wellie Way. After only 70 meters another borehole lead was seen going off.

The Wellie Way was relentless 25-meter-wide borehole, zooming south for 1000 meters between ever-present mudbanks, often with indiscernible walls. Another southwest borehole lead was passed along the way, and they quit where the Wellie Way split. To the left was an infeeder coming from a 6-meter bolting lead. To the right the main way appeared to continue downward at a steep angle. They had mapped more than any PEP survey team ever had before, knocking



King Solo surveys his realm from the Mexico-shaped throne in the Throne Room. 1990 photo by Peter Sprouse

the day total up to 2520 meters. They had made so much progress that it took them 5.5 hours to get back to camp.

Notable quotes from the Wellie Way:

"The Fantasia Borehole is like a long, big room. The Wellie Way is as big or bigger, only it's a passage."

"I think I'll send KLM some more airfare, this is too good of a deal."

"Most impressive..."

"More than you can hope for."

JJ reportedly "fell for a kilometer" in the Wellie Way. Cavers looked "awesomely small".

Day 8 was recovery and packing time. Steve, Dale, and Peter napped, then left for the surface at midnight, out of sync with the others. The next day (if you can call it that) the rest of us headed out in several groups. Some left off piglets in the entrance series, to be retrieved the next day on the de-rig.

We relished the sunshine on 14 March and eventually wandered back into Tecolote to de-rig. The next day after a short hike the trucks ground down the steep mountain in low gear to a welcome bath in the Río San Pedro, and a sumptuous meal at El Mesquite in Cd. Victoria. Camping up on the ridge at Altas Cumbres we partied late into the drizzly night in Ray's big tent. The following day Dave, Paul, and JJ got out at the bus station for their continued journey through México, while the rest of us drove north for the border.

The 1991 Tecolote expedition had been a resounding success, fully in line with all expectations. Given the scale of the new borehole series with its many large leads, discoveries on the next expedition are liable to be even greater. And so will the challenges, given the distances from the entrance. Tecolote's calculated length now stands at 28,119 meters, and the depth has increased 150 meters to 408 meters.



The El Hundido discovery and exploration crew, May 1973. (l to r: John Mikels, Mike Padgett, Jack Conklin, Nick Morales, Armando Canales, John Faust) Photo by Jack Conklin

P.A.S.S. Exploration in the Purificación Area

by John Mikels

This report summarizes cave exploration done in the Purificación area from October 1971 through January 1974 by cavers of the Pan American Speleological Society. This club was formed around 1968 at Pan American University in Edinburg, Texas. John Clayton, Frank Cummings, and John Kreidler were among the founders. I got into it in the fall of 1970 when I started going to Pan Am. Some early PASS caving areas were Bustamante, Galeana, the Sierra de el Abra, and Ocampo, Tamaulipas. There was a core group of eight or ten cavers in the club in the early seventies, as well as others with a more passing interest.

The principal persons involved on the early trips to Purificación were Nick Morales, Mike Padgett, Tom Washington and me. Others participating at various times included Armando Canales, Joe Cantú, Jack Conklin, Diane Dupnik, David Johnson, Judi Mangham, Kathy Schmidt, and a couple of others whose names I've forgotten.

Our initial interest in the Purificación area developed after reports of two or three "large black holes" being spotted from the air. Mike Padgett's father was a pilot for the USDA as part of the screw worm eradication program, flying out of the Río Grande Valley and Tampico. He reported seeing three large pits in different parts of southern Tamaulipas which we were able to identify. One in the Sierra de el Abra was La Caldera, another was Sótano de El Refugio (or

Guacamayos), north of Ocampo. The other one was northwest of Ciudad Victoria, and became the target of a number of trips attempting to locate it. Mike's father wasn't able to provide an exact location for this pit, but he did mention that there was a fire watchtower to the west several kilometers, which gave us a point of reference.

Our first trip was in November 1971. Mike, Nick, David, and I drove Mike's VW squareback to a small village at the base of the mountains west of El Barretal, where we camped the night of November 18th. The next day we spent a rough seven hours driving up into the Sierra Madre on a narrow, rutted lumber road. We were trying to get to the town of Las Minas and the black hole spotted nearby. At a small lumber mill village named Puerto Purificación we inquired and found that we couldn't reach Las Minas in the time we had. So we got a local to show us some caves in the area. He guided us to a couple of sótanos within a few hundred meters of a "side side-road". The two pits are about 100 meters apart and both are dead-end 34-meter drops, known locally as Sótanos de Contrabando. With the arrival of dusk the day's explorations were terminated.

On November 20th we located the elderly *patrón* of the village, Señor Antonio Grimaldo, who agreed to show us some more caves. This friendly and spirited gentleman knew of no large pits in the area, but he did lead us to another pit like those of the day before. It

was about 30 meters deep and dead-end. The short hike was through fantastic scenery, and we were also taken to a horizontal cave about 30 meters off a small side road. It was approximately 100 meters long, active and well-decorated. The entrance was a wide stoopway in a depression. About half the floor was white flowstone with numerous pools. We mapped it and took some pictures, trying to take care not to damage the flowstone floor. The locals call this Cueva de la Coajada. Talking with Sr. Grimaldo, we learned of numerous caves and pits "muy grandes y bonitos" farther up in the mountains, but they would involve long hikes and backpacking. He was most hospitable and invited us to share his Thanksgiving guajalote dinner. We promised to return in the near future. Our friendships did pay off on a later trip when he helped some sick cavers get over Montezuma's Revenge. After bidding goodbye on the afternoon of the 20th we began the long drive back to the highway. Then we went to Ciudad Victoria and into Peregrina Canyon to join the PAU Geology Club field trip.

In July 1972 Frank "Pancho" Cummings and I explored a cave along Highway 101 between Ciudad Victoria and Jaumave. This was one of those spur-of-the-moment "we don't have anything better to do this weekend" trips. One of the advantages of being in the Valley was being only a four-hour drive from the mountains. Weekend trips were very easy to do. On this particular trip Pancho and I piled into his VW microbus and headed to Tula, off to the southwest. We had previously made a couple of trips to the Ocampo area, coming in from the east side, and were curious about access from the west. However we found that the roads going east from Tula were largely impassable once you got out of the flats.

On the way back toward Victoria we stopped at times to ask the locals about caves. Near kilometer post 139 we took a remnant of the old Victoria road to the southeast for 1100 meters, and parked just past an old stone bridge. Cueva de la Mula is located in the opposite wall of a ravine paralleling the dirt road, about 200 meters beyond the parking spot and around a bend in the road. The cave is essentially a straight tunnel measuring approximately 2.5 meters high, 6 meters wide, and 250 meters long. It contains a large bat colony, including vampires. The relatively flat, undecorated passage appeared to have been mined, probably for guano. It was very dry and dusty, with a strong ammonia odor. Because of that, we didn't really spend enough time in there to thoroughly check it out.

Further exploration in the Purificación area was

principally along the right fork road out of Puerto Purificación up to Rancho Nuevo. At Puerto Purificación in mid-April 1973 we encountered a group from the Greater Houston Grotto who were exploring the area on motorcycles. Charles Fromén, Mike Connally, and Jim McLane had ridden up from the highway with little gear or food, and gratefully accepted Sr. Grimaldo's hospitable food and lodging for the night. They planned to join our PASS group the next day, but rather than taking the right-hand road toward Rancho Nuevo, they were directed up the left-hand road to Conrado Castillo. Thus they ended up discovering and exploring in three caves called Borrego, Desmontes, and Brinco. They caught up with us later and we provided them with a meal and gasoline for their bikes.

The next day we obtained a guide to a promising horizontal cave called Cueva de California, near Mina el Ojito between Revilla and Rancho Nuevo. It was impressive and well-decorated, and we only partially explored it. We also bottomed several blind shafts in the 10-70 meter range, and mapped Cave of the Leech (*later named Cueva del Vandalismo -ed.*). Efforts to find a route to the black hole from this area were not successful.

In May 1973 we made our first venture down the Revilla-Yerbabuena road. Even in Nick's four-wheel-drive pickup we had to do a lot of road work. In Yerbabuena we found a local who knew of a "nearby" pit that was "muy hondo". An easy 45-minute drive along roads that had seen no traffic in years brought us to a large meadow. We parked and were led for 45 minutes of jungle-crashing to the pit, called El Hundi-do. Ahh - at last! Our guide was baffled by our antics and expletives. Loco gringos. Through the late afternoon mist we could barely see the other side of the pit. It reminded me of a cross between Golondrinas and La Caldera, with an overgrown and overhung lip and a densely vegetated bottom. The entrance was large enough around that the far side was kind of just out there in the haze somewhere. Since it was dusk and we had no equipment, we contented ourselves with boulder rolling. Hmmm....300-400 feet.

The next morning we returned prepared for a descent of up to 500 meters. Mike rappelled in first from the low undercut side, a 108-meter free drop. He had to chop his way through a large tree to reach the bottom. Nick and I followed to explore and map the floor. We did our depth determination by marking off the rope and measuring it afterwards. We had a pretty thorough look at the bottom. The only possible lead we found was a fissure at the northeast end.

However it was at the base of a large unstable talus pile so we didn't enter. We left some sort of register where the rope lands. Meanwhile Jack, John, and Mando surveyed a loop around the entrance.

Though densely vegetated at the bottom, El Hundido doesn't appear to take appreciable drainage. It is floored with rubble and loose, dry dirt. It is developed in the dense, massive Cupido limestone (*now known as the Tamaulipas Formation - ed.*). In the pit the Cupido dips southwest at 20-46 degrees. A large monoclinial flexure and extensive jointing and fracturing are evident. These probably provided a disturbed weak zone which was conducive to the solution and collapse that created El Hundido. Our survey showed the entrance drop to be 108 meters and the total depth to be 186 meters. The entrance measures 189 by 131 meters.

In November 1973 exploration continued in the Revilla-Rancho Nuevo area. Again mostly shallow, blind pits were found. A promising pit lead near the fire tower at Rancho Nuevo was found, but not entered. Around that time we also had an opportunity to fly over the area and take pictures, in conjunction

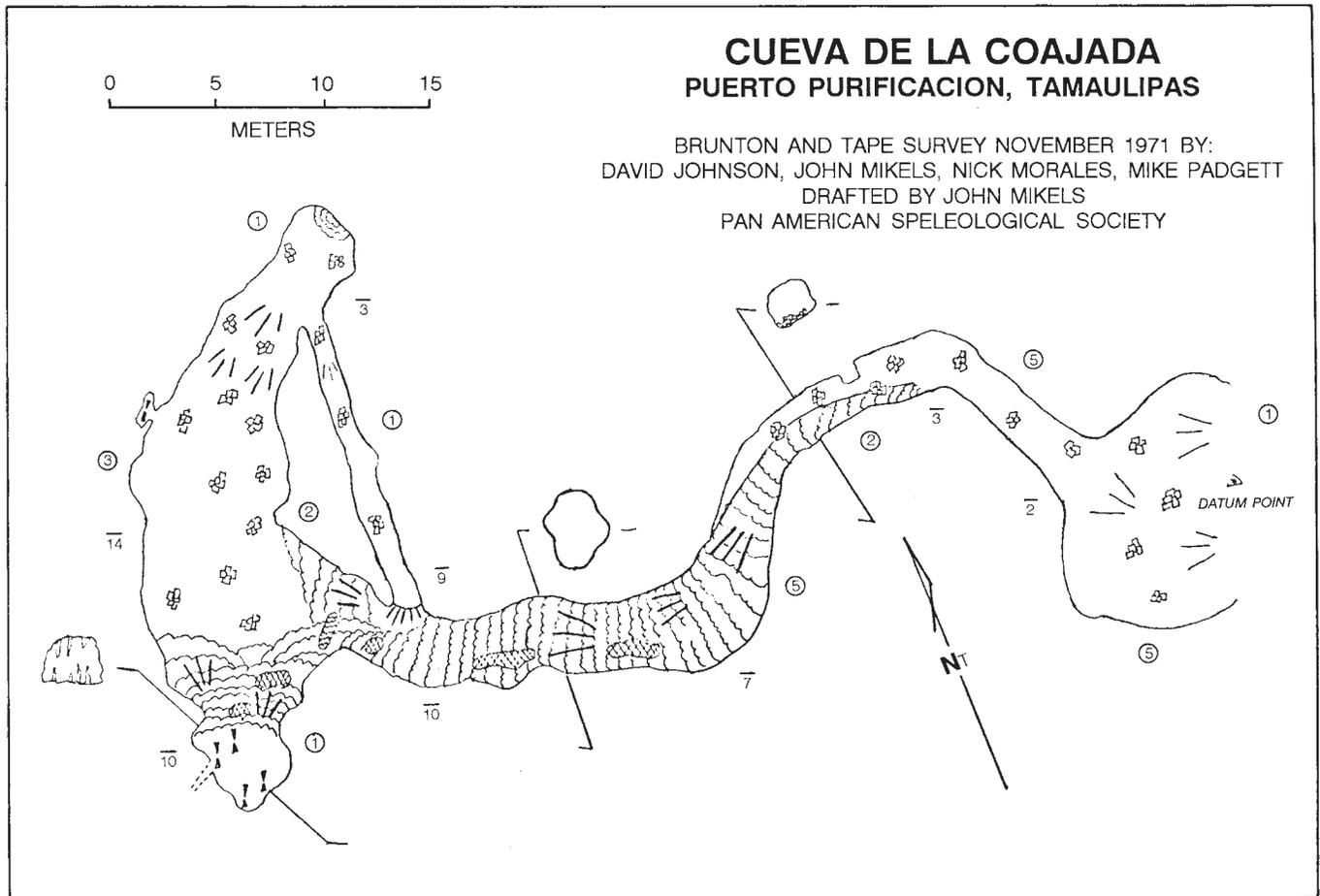
with the preparation of a geologic guidebook to nearby Peregrina Canyon, near La Libertad. There was one bat cave which we explored in Peregrina Canyon which was formed by a collapse in an anticlinal core. This cave was dry and dusty, basically a large shelter. It is on the north side of the canyon at a point where the road is held up by a retaining wall.

We had two groups in the area during December 1973-January 1974. Jack, Mando, Joe, and I bottomed the pit south of the fire tower, Sótano de la Torre. It was 70 meters deep and blind, with about 20 meters of decorated passage at the bottom. We then hauled over to the area of the Peregrina and Novillo canyons to finish up some geology work. The other group, consisting of Nick, Mike, Diane, Tom, Cathy, and Judi made the initial exploration along the road from Los Caballos to Tinajas. They found a number of shallow, blind pits. Tom Washington drew up maps of some of these, but I don't know where they were located. Numbers were assigned to the various pits and caves we explored, which were chiseled into the rock at the entrances to help identify them.

That was the last trip that I was on to the area. I



View of the lowside area of El Hundido. 1973 photo by Jack Conklin



know that some of the other P.A.S.S. cavers have been back a few times. Nick Morales went down in 1978 to help rescue Chris Kerr from Brinco when he fell. They rigged up some kind of litter in Nick's camper to carry him down the mountain. The Pan

American Speleological Society doesn't exist as a formal entity anymore, having faded out somewhere between 1975 and 1977. Most of the core group still live in the Valley, like Tom, Judi, Nick, and Mike.

PURIFICACION SPELEOMETRY (Aug 1992)			
	Length	Depth (in meters)	
1.	Sistema Purificación	78,626	904
2.	Cueva del Tecolote	28,119	408
3.	Sótano del Las Calenturas	7,511	121
4.	Cueva de La Llorona	3,540	412
5.	Cueva del Borrego	1,354	58
6.	Sótano de la Cuchilla	1,306	172
7.	Sótano de Trejo	1,160	80
8.	Cueva del Río Corona	1,150	--
9.	Sótano de San Marcos	1,019	126
10.	Pozo de Las Chinas	--	162

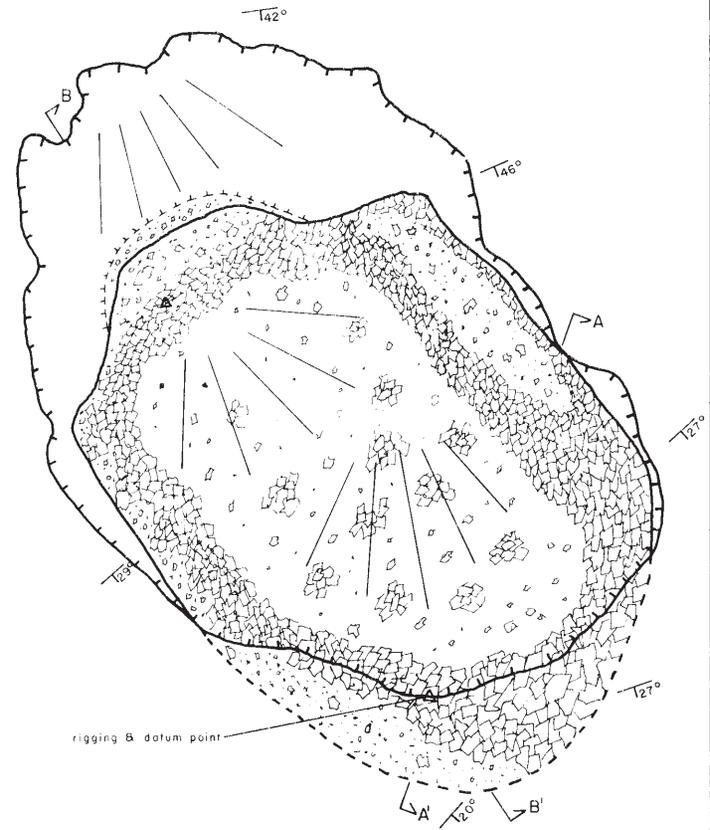
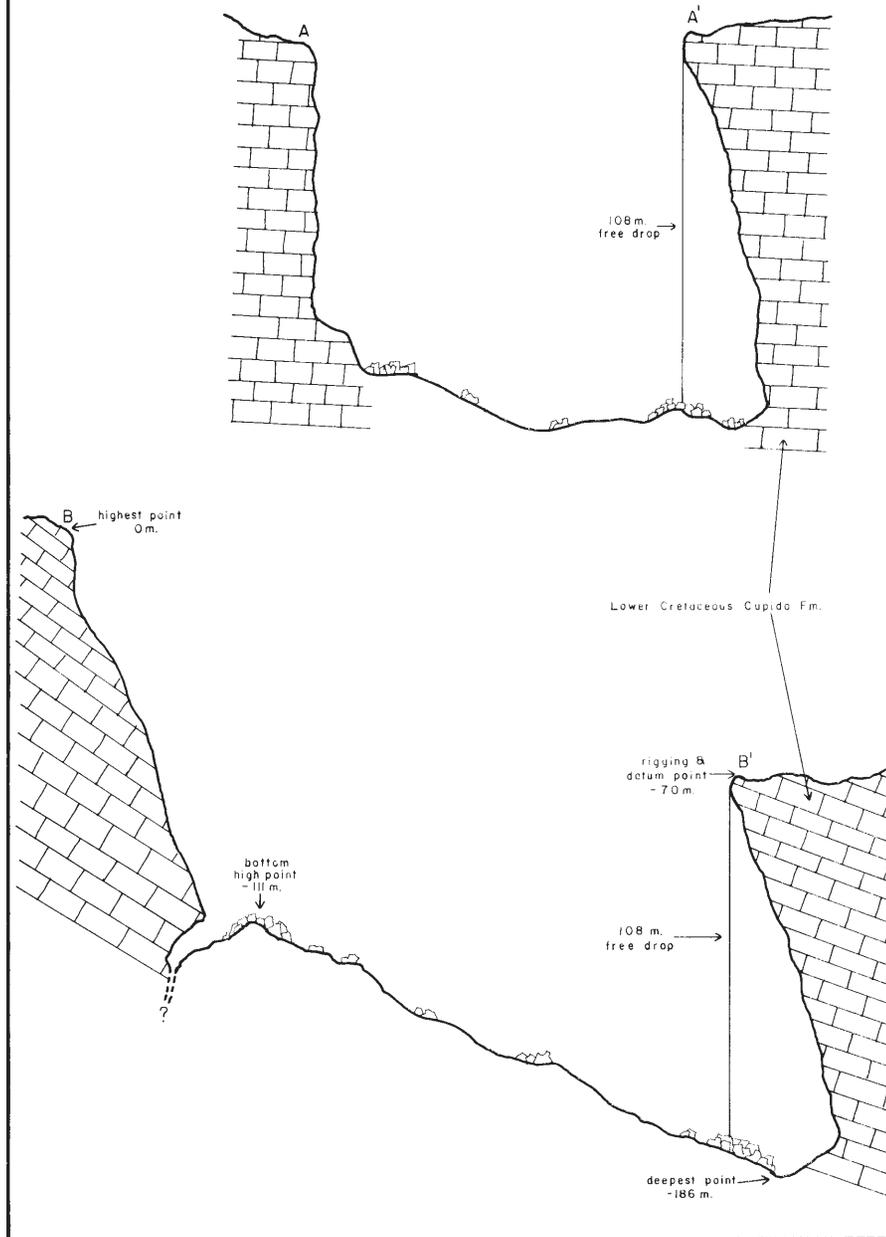
EL HUNDIDO

TAMAULIPAS, MEXICO

SUUNTOS & TAPE SURVEY BY MIKE PADGETT,
JOHN MIKELS, NICK MORALES, JACK CONKLIN,
ARMANDO CANALES & JOHN FAUST

P.A.S.S. & A.M.C.S. MAY 16, 1973

DRAFTED BY JOHN MIKELS, JUNE 1973



Cueva Paraíso Difícil

by Paul Fambro

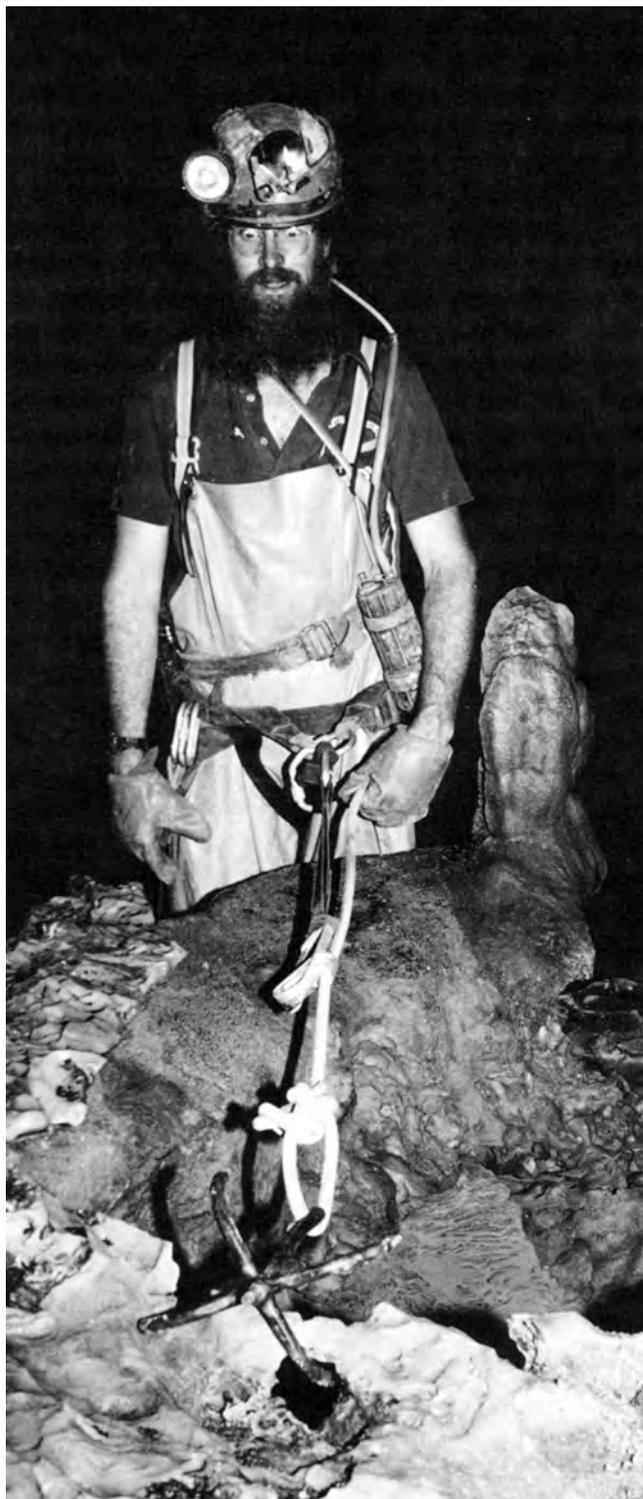
THE DISCOVERY

It was during the PEP November 1990 Expedition to Sótano de las Calenturas, near Yerbabuena, Tamaulipas, that project coordinator Peter Sprouse gave Terry Gregston and me an off-day assignment to check out a large sink in the area. This particular depression showed on the topo map of the area, on the southern flanks of the Olmo canyon to the northeast of Yerbabuena. An opportunity to check out the extent of a new logging road, winding down the steep canyon slopes in the vicinity of the sink, was also available.

It was late afternoon when we began our descent from the "road blast" along the sheer cliff just north of Puerto del Oso. Along the way we passed a crew of road workers in an old Ford 4x4 pickup. They yelled and waved as they tossed a couple of rocks our way. Upon examination, the rocks turned out to be calcite and loaded with pyrite. We finally reached the end of the driveable road; a point where the road crew was blasting. There had been signs of logging in the side canyons, and parked at the end of the road was an A-frame truck with a V-8 winch engine, complete with "Lone Star Beer" emblems on the doors. So the age-old question was answered. Where do all the old...

As we mused over the "Lone Star" encounter we worked our way toward the sink, which was only a hundred meters away. With a good bit of chopping and way finding, we ended up in the bottom of the depression, only to find that it was large, flat floored and covered in thick forest and undergrowth. A thorough search of the sink turned up no leads. A number of huge pine trees had recently been cut and lay strewn about the floor of the sink. We knew where the road was headed.

The light was beginning to get dim in the thick forest and deep canyon, so we headed back to the truck. Looking back to the west, through the trees, toward the eastern walls of the massive "peninsula" of high cliffs that jut out from the southern canyon rim, we saw a large black hole in the cliffs at about the same elevation as the Cueva del Río Corona resurgence entrance. We could tell it was on much higher cliffs than those towering above the Corona entrance, but the thick trees and dim light prevented any detailed reconnaissance. It appeared to be at least 250 meters down the peninsula cliffs; however, we thought it might be approachable by a long hike from the area



Mark Minton finds what he hooked in Cueva Paraíso Difícil. 1992 photo by Paul Fambro

we were in. We arrived in camp at dark with our news and immediately began planning a return to make an attempt to reach this new cave. Since the Calenturas expedition was drawing to a close, it would have to

wait for another trip to the area.

One month later Terry Gregston, Robert Schulze, David and Sandy Dodge, a small entourage of new Austin and Washington D.C. cavers and I arrived back in Yerbabuena. It was during the Christmas holidays and we practically had the place to ourselves. The first afternoon was spent picking up trash from the Calenturas expedition campsite. Okay cavers, what's the deal?

Robert, a friend of mine from work, who wanted to get back into caving, came along with my promise of beautiful scenery and a potential great find. Well, he got both. The morning after arrival, December 27, he, Terry and I packed out of camp early and drove to a point on the new logging road that looked like a good place to begin our hike, based on the study of the topo and air photos. The hike, by compass bearing, took us bushwhacking toward our goal for two hours. Due to the thick forest cover, it was impossible to see the cave itself. As we approached to within a couple hundred meters of the peninsula cliffs, they began to loom through the trees. We still could not locate the cave entrance. The visibility was still too poor. A little farther and we came upon a deep gorge which was not indicated on the topo, which is not surprising because the topo is not very detailed in this complex area. Upon reaching the rim of the gorge, the view became better with the exception of a few branches. A little maneuvering allowed us to spot our entrance. It was a huge shelter with old visible formations a good ways above us on the opposite cliff wall. It became immediately clear that we would not walk to the entrance that day or any other day; there were several hundred meters of cliff above the entrance and well over a hundred meters of the gorge below it.

Our initial reaction was dismay, then morale picked up. "Well, it is a shelter anyway...and look at this beautiful canyon below us. Isn't that a river down there? There sure is a lot of water noise coming from up-canyon and from behind those 250 meter high buttresses." Terry encouraged Robert and me to follow her for a better view further along the rim, which formed a little ridge between the gorge and the valley behind us. It was a hot and humid hike and I had done all the chopping, so it took me awhile to agree. In just a short distance down the ridge, we began to see portions of an extremely tall waterfall; one that later turned out to be over 200 meters with a small staircase halfway down. As we moved along the ridge and peered through the branches, the entire waterfall with a large, emerald plunge pool became visible. Then, with exclamations in almost perfect unison, we all became aware of the gaping black hole in the cliff face

next to the waterfall about two-thirds of the way down.

On a level with our position was a huge entrance, over ten meters wide and about twenty-five meters high, that went back into blackness. About thirty meters below this entrance was another small potential entrance with a small pool perched in the giant travertine. Water from this pool ran diagonally to the left and joined the main waterfall. The excitement was undoubtedly high. Terry commented that the place looked like paradise, right out of a South Pacific island, but that it was going to be extremely difficult to get to; therefore, we agreed to name it Paraíso Difícil, Difficult Paradise. We photographed every angle with a variety of lenses and took bearings for reconnaissance purposes. The tentative location put the entrance directly under the northeast corner of the peninsula and over 400 meters of sheer cliffs below it. This waterfall had to be Corona resurgence water. We made a futile attempt to climb down into the gorge and around to the plunge pool. We gave up when the going got too steep on a talus slope. Later we learned that there was about an eighty meter undercut drop to another huge, black pool directly below where we turned around. This pool is offset and about thirty meters below the main plunge pool.

Needless to say the hike out was full of talk and excitement at rest stops. We reported our find to our friends who had spent the day in Calenturas. Some of us spent the next several days working on other small PEP projects and additional reconnaissance for an attempt at our new find. Since it appeared the only way to get to the entrance was from above, this included a hike down to the Cueva del Río Corona resurgence entrance. A short hike downstream from the resurgence led me to believe that we could attain the top of the waterfall via this route. As we drove back to Austin, I couldn't help but wonder how all of us cavers, who spent countless hours in the area, had overlooked this amazing place for over ten years.

THE ATTEMPT

Knowing that the attempt to get down to Paraíso would take a good bit of physical effort and technical ability, I began talking to a few people that might be interested and have the experience. Peter Sprouse came up with a few photos he had taken a year or two earlier while flying over the project area. The Paraíso waterfall and canyon were visible and the photos provided assistance for planning. Additional PEP file information from Mexican 3-D air photos gave me a

little more. Using the file information, Peter's photos and primarily the photos taken on the day of discovery, a plan began to come together on a methodology. The technical team for the Thanksgiving 1991 effort consisted of Mark Minton, Jeff Horowitz, Jim Feely, Jerry Atkinson and me, all with extensive PEP area and technical experience. Backup, communications and Discovery Ridge photography and support would come from Terry Gregston, Nancy Weaver, Bill Feely and Bill Schults. Jeff, Jerry, Terry and I left Austin three days ahead of the rest of our team with lots of rigging gear and rope. We decided to camp on the peninsula above Yerbabuena due to its proximity to our work area.

Our early group set camp, and with some difficulty, rigged an alleged 240 meter rope over the east side Peninsula cliffs above the Corona resurgence. This was to be the short-cut access route for our team and the Calenturas group that would work in and around the Corona resurgence, instead of the usual trail route. This trail can be driven to, or is about a twenty minute hike from camp. The trail itself is steep, semi-treacherous and one-hour-plus down to the Corona resurgence. Not knowing whether the rope was on bottom, we elected to hike the trail for a recon trip to see if we could get to the top of the waterfall. We re-chopped the trail and cleared some fresh-fallen rubble. At one point a forty-five kilo rock fell and trapped my leg against a tree. Jerry came to the rescue and rolled the rock off, sending it on its way to clear a path in the jungle below. We reached the Corona resurgence and began picking our way down the arroyo. We located our cliff rope. It was about twenty meters off the arroyo floor. This place was like paradise and we could only speculate about what lay ahead. After a lot of snooping and back-tracking, we eventually found a route to the top of the waterfall. We actually made it without the use of ropes, but it was steep, slick and a little treacherous as well.

We actually could not see a lot from the top of the waterfall. The arroyo floor just dropped out of sight between the two towering buttress side walls. The view out the Corona side canyon, into the Olmo Canyon and beyond was spectacular. There was one perfect rig point, a giant boulder mid-stream just before the plunge. We of course could not see how much offset we would have to deal with to get over to the Paraíso entrance, and our only choice was to go straight down the waterfall. As we looked out over the waterfall, we knew that it jogged to our left toward the entrance, but we also knew that the entrance was still to the left of the final pitch to the plunge pool. Know-

ing that we could make an initial attempt after toting a good bit of gear and rope about 270 vertical meters and over a lot of only slightly horizontal terrain from camp, we kicked backed and just soaked up the awe-inspiring beauty and power of this place. Before departing for camp, I was able to contact Jim Feely on the radio. His group along with Mark and Nancy had arrived and were in camp. I told him it was a go and we took off on our two hour, straight up hike.

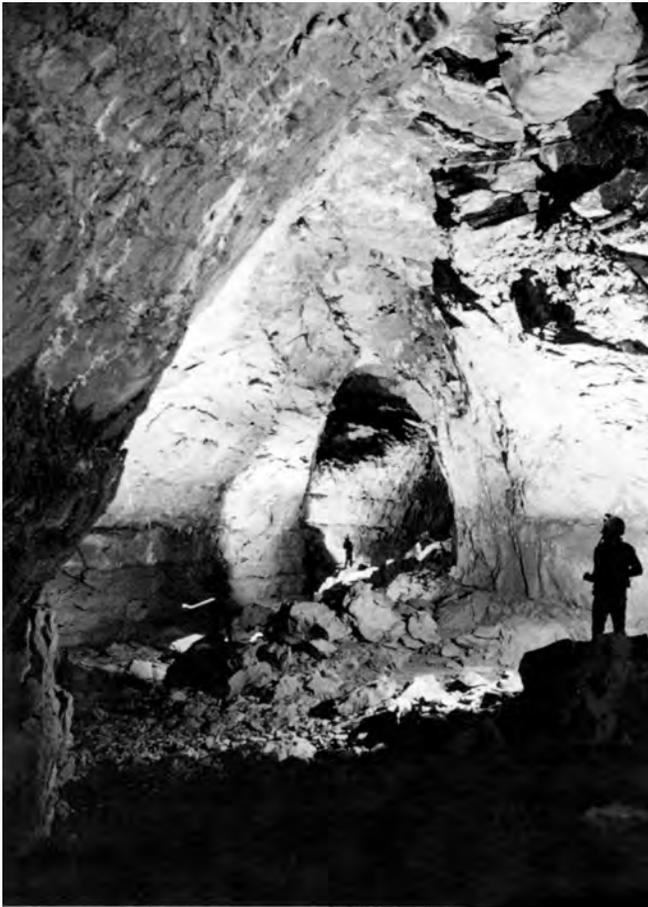
Everyone rested the next day and visited with other cavers arriving for Calenturas explorations. We also lengthened the Corona cliff rope and lowered some gear. No one seemed excited about using the rope for rappel and opted for the hike the following morning. Jim Feely elected to lead the communications, video and camera crew bound for Discovery Ridge. They would have an excellent opportunity to not only guide our progress, but to photograph and video tape the whole descent to the entrance. Wayne Bockleman replaced Jim, and Mary Thiesse joined Jim's team. The ridge team dropped us off at the trailhead and drove on to the sink where they pioneered a new and much closer route to Discovery Ridge. Mark, Jeff, Jerry, Wayne and I loaded up what seemed like tons of remaining gear and headed down-slope. We arrived at the waterfall after a lot of slipping and sliding with the heavy gear. Mark rigged the rope while the rest of us put on our full rain gear and vertical gear. We were expecting a full rappel in the waterfall. I went first following the left (looking out) side. Unfortunately, Mark had unknowingly rigged the rope over to the right and I had to pull it across the waterfall as I rappelled. Then, the rope hung on the right side as I dropped into an alcove. Water poured down on my head and ran down the front of my collar opening as I struggled to free the rope. Fortunately, we had dammed the water on the left side and reduced the flow. After getting wet and unable to free the rope, I clipped in and climbed out.

The other guys pulled the rope free with great difficulty. A quick inspection and re-rig to the left allowed Mark to descend and stay relatively dry. He initially landed on the Stair Step of the waterfall about 130 meters down. There was a perched plunge pool at that level with a tiny ledge leading around toward a point high in the entrance. The Discovery Ridge team was in radio communications with both Mark and us

Overleaf: The Río Corona cascades down the cliff past Cueva Paraíso Difícil, where it joins water flowing from Cueva Paraíso Abajo. A caver stands at the top of the falls, with another on rope above. 1992 photo by Terry Gregston







Entrance Borehole of Cueva Paraíso Difícil. 1992 photo by Paul Fambro

at the top. We could not talk to Mark directly, but the relayed message from Discovery Ridge was "more rope." Jeff went with more rope, then Jerry, I and Wayne followed. We all crouched in the spray and dribble on the extremely narrow ledge that pinched to nothing in less than ten meters, while Jerry and Mark set a couple of bolts in the crumbly, moss-covered travertine. The Discovery Ridge team radioed that we were below the top of the entrance, around fifteen meters offset and about forty meters above the tree covered shelf immediately below the entrance. Not being able to determine the width of the ledge we were on, they radioed, "Why don't you just walk the ledge over to the entrance?" "Yeah, sure..." We could lean out just a tiny bit and see over 100 meters free fall to the Emerald Pool. Mark went down the next pitch and Jeff followed. They rappelled to the end of the thirty-eight meter rope and got off on another ledge, boggy and muddy. We later named this pitch the Slime Climb. A short traverse placed them in the entrance alcove about thirteen meters below the entrance floor. Mark climbed up the opposite wall and gained a ledge

that was just below the entrance, but did not allow access to the cave. Actually this was a big ledge, two to three meters wide, with an incredible view of the waterfall, Emerald Pool, Black Pool, the lower Corona canyon and Discovery Ridge. It was getting late and very cold, so we headed up the waterfall, up the trail to a waiting truck and back to camp, which was 400 vertical meters from our small ledge.

After a day of rest, we packed up more entrance aid-climb gear and trekked and rappelled the approximate 440 vertical meters down to the entrance. Jim, Nancy and Mary joined us this day. The communication and photo crew was at Discovery Ridge again to assist. Some time was spent cleaning up the rigging on the way down from the first day's quick rig. The central wall up into the entrance was mostly breakdown fill and extremely crumbly. Mark began a climb up the left overhung wall. The progress was slow. The first two aids were lassoed tree limbs which got him to the breakover of the overhung section. He set a bolt or two in solid limestone, stepped into an etrier and called for the grappling hook. In a toss or two it wrapped around another small tree and hooked on a root. This tree was on yet another small ledge that led directly into the entrance. With a quick weight test, Mark was off to the ledge. As the others belayed or watched Mark, I set the number 250 PEP entrance tag and took lots of photos. Jim, in bright orange rain gear, and I posed on the outside ledge for photos from Discovery Ridge.

Mark gained the ledge, rigged a standing line and headed into the entrance. Jim, Jerry, Jeff, Wayne and I quickly followed. This entrance was astounding and the view in both directions was awesome. After posing for photos in the entrance, we were sucked into the cool blackness. This was borehole cave. We were well into the cave before we needed lights and virtually ran through the borehole to see if it really continued before we had to head back up to camp. It was already getting late.

The borehole continued at about the same size as the entrance and got a little smaller and a little bigger here and there. At 300 meters into the cave we came to a wall-to-wall drop. The floor, which had been breakdown the whole way, now fell away at our feet. All we could see across and down was blackness. A faint sound of running water came from below. A few rock tosses indicated about forty meters. Mark's Wheat lamp on high power only showed a faint hint of a distant wall at our level with blackness above and below. We did not have rope with us and if we wanted to make the climb and most of the hike out before

dark, we had no more time.

We returned to the entrance with jubilation and reported our good news to the Discovery Ridge team. They had been in radio contact with the Calenturas team that was working way over in Cañon la Cueva and had relayed our entrance success. Again, the long climb and hike put us in camp well after dark.

We took another off-day and worked on various projects in the area. On the final day of exploration for this trip, Jerry, Jim and Jeff honorably chose to stay topside in order to allow seven other cavers a chance to see and participate in the Paraíso effort. This day Mark, Wayne and I from the original team were joined by Peter Sprouse, Jon Cradit, John Fogarty and Bill Stephens to form two survey crews. Terry, Mary, George Love, Dawn Reed and Harvey DuChene followed the survey teams down to the entrance for photos and to behold the beauty. My apologies to those who did not get the opportunity to go down to the entrance due to the logistics, time schedules and technicalities involved. And my thanks to those individuals who got to go as well as those who did not, who displayed courtesy and understanding.

Peter, Jon and Bill surveyed the entrance area and the 300 meters to the drop. John, Wayne and Mark surveyed the large room. I took photos for PEP documentation. The drop from the main passage into the large room was about forty meters. There were several lakes and a huge flowstone mass with an active waterfall against the back wall. This was coming from the blackness above which could be a continuation of the main passage. A streamway popped out from under a rock, meandered across the floor and down a small hole forty meters below and under the main passage. A stoopway above the disappearing stream led to a pit, a short distance away. Water could be heard coming into the side of the corkscrew pit. We speculated that this passage and stream, traversing below the main passage, might be the one noticed resurging about thirty-plus meters below the main entrance on the travertine coated cliff. We had no additional rope for further inspection. We would look at it next spring.

Mark spent some time looking for leads on the far side of the room behind the huge flowstone falls. He traversed a chest deep lake and reported another well-decorated chamber with a lake and aid-climb above it. He noted that an aid-climb up the flowstone falls would be rather difficult. So far, almost all efforts to explore the cave live up to its name.

Due to the significant amount of de-rigging and the long vertical climb back to camp, we headed out in early afternoon. We had carefully planned the depar-



Jeff Horowitz on tension traverse over pool in Paraíso Difficil. 1992 photo by Paul Fambro

ture and de-rigging process to minimize the wait time for climbers at the various ledges. Some rebelay and personnel staggering were set up to facilitate this while allowing enough manpower to leap-frog the gear up the sections. Jeff and Jerry came down to the waterfall from camp to help us tote out the gear, a very welcome assist. Everything worked well even though we tail-end guys ended up with some heavy loads to carry all the way out. Some of our early-out, original team members had to walk all the way back to camp after being abandoned by the first of the two trucks. The rest of us tail-end guys stumbled up to the second truck and drove into camp just about dark. The next day, after working out the sore spots and sore muscles, the other remaining PEP cavers helped us de-rig the Corona cliff. I am proud to say that the Paraíso team accomplished the mission it set out to do, and even exceeded its goals.

THE RETURN AND CAMP I

In April 1992, a Paraíso team including Jerry Atkinson, Jeff Horowitz, Nancy Weaver, Mark Minton, Mary Thiesse, Wayne Bockleman, Terry Gregston and me returned to Yerbabuena to set a camp in Paraíso for a minimum of three days. The weather was wet and the road to and beyond Los San Pedro was difficult. Tire chains and winches were used on a number of sections. We camped on the peninsula above town, cleaned up trash again from the previous PEP expedition and rigged the Corona cliff as an aid to transport gear. Rigging with a known length rope gave us a more accurate cliff height of about 220 meters from the top to the stream just below the

Corona resurgence. Our goals for this trip were to work on the various side leads in the main passage, check the downstream pit under the main passage, push the lower lead beyond the lake in the large room, look at the requirements for an aid-climb up the immense flowstone waterfall and descend below the entrance to the resurgence on the cliff face.

We made a trip to the top of the Paraíso waterfall via the Corona trail and used the Corona cliff rope as a haul line to stage all the gear for normal rigging, a camp and technical climbing. The following day we hauled down the final gear and descended the waterfall. Mark and Nancy checked out the alcove halfway down the waterfall but found no passage. We made several rigging changes from November '91 to make the descent more efficient and direct for multiple climbers. The Slime Climb was re-routed, but still remained muddy and wet. The entrance climb had been left with a short pull line from November '91. It still took some tree climbing to get to it. We set camp in the "twilight zone" in the main passage and went back to rig the drop into the large room. We have yet to name this room. John Fogarty made a suggestion when they surveyed it, but we have not come to any agreement. We were very surprised when we reached the room. It was totally flooded. The downstream pit lead and even the survey stations were well under water. This immediately ruled out two planned activities; the downstream pit and the re-survey of four stations in the large room due to a vertical closure error. By moving the rig point to bolts on the left wall, we were able to rig a wall-hugging, two-pitch, dry route to the back of the room.

On the second day, the ladies' team rigged the thirty meter drop below the main entrance to the cliff face resurgence, which we named Paraíso Abajo. It turned out to be a surprisingly big, lake-filled passage heading back under the Paraíso entrance and main passage. Mary and Nancy swam about 200 meters into Paraíso Abajo before turning around at low air space. They did this without wetsuits and I understand they were a little blue upon their return to the entrance. The rest of us focused on the upstream leads from the large room. I took along a high-powered light from Jim Feely which allowed us a better look at the continuing upper level main passage across the large room. This is the upstream flowstone falls lead. Even though the high-powered light barely lit up the passage across the long distance, we were astounded at what we saw. This passage was even larger than the main borehole passage we were in. Huge draperies of flowstone and an active stream poured out of this

passage down into the back of the large room to within centimeters of the equally huge flowstone mounds below them. All of us agreed that a climb up the flowstone or the adjacent overhung walls was out of our league and would require someone with more big-wall climbing experience or perhaps a grappling hook cannon. We estimated a distance of well over fifty meters from the floor to the passage above. Fortunately, by scrambling up the backside of the flowstone mounds, the climb distance could be cut to approximately thirty to thirty-five meters.

This proposition left us with the lower upstream lead as the most promising area to work. The perched lake that Mark had waded across in November was rigged with a tyrolean to give us dry access to the other climbing lead located above another lake in a large, well-decorated alcove behind the flowstone mounds. Mark began the short climb with Jeff on belay. If Mark peeled off, at least he would land safely in the lake. I spent time photographing the alcove and waiting to catch the big splash. Mark worked about three fourths of the way up and called for the grappling hook. With a couple of tosses from his position, the hook caught. I tested it with my weight and it held. This is, I believe, the third successful use of Mark's new grappling hook on this cave.

Mark climbed up and over the lip, then yelled down, "You aren't going to believe this!" I climbed up next to photograph the reason for his exclamation. One prong of the hook had gone through a four centimeter hole at the edge of the paper-thin lip of a small pot-hole. The greatest surprise was it held. We all continued up the large passage for a ways and came to another large lake with a three meter high, pure-white flowstone dam on the opposite side. Skirting along the left wall allowed us dry access to the dam. We washed our muddy boots before stepping onto the pristine flowstone. Water flowed evenly across its entire ten meter width from the lake behind it. This lake was wall-to-wall and deep. Mark decided to check it out. With wading, swimming, and scrambling over additional rimstone dams, he traversed almost 100 meters of passage that included several domes worth checking. He turned around at a low space over a dam but decided not to check the domes alone. We will have to return with wetsuits for a further push. These domes could allow access to the huge borehole passage above. We feel the water in this lower passage could possibly be pirated water from the borehole. We named this entire lower stream lead the Rfo Sacajawea.

We returned to the entrance to hear about the success of the Paraíso Abajo team. All of us rappelled

down to have a look. Jeff, Jerry and I tied the Abajo and main entrances together with a survey while Mark notched the Abajo entrance rimstone dam about fifteen centimeters. Back in camp, we ate, then Mark and Wayne worked on a side lead climb, while Terry, Jeff and I did borehole photos. Since our dusty camp was just a short distance into the cave, we could sit in the entrance at night and enjoy the magnificent setting. Even though we were in the middle of nowhere, almost 450 meters down in a side canyon and gorge, we could not escape the influence of man. Commercial airliners could be seen crossing our slice of the night sky.

The third morning found Mary, Nancy and Terry packing their gear and heading back up to base camp. Mark and Wayne continued working on the main passage side lead climbs while Jeff, Jerry and I returned to survey the Río Sacajawea area. Only about seventy meters of survey was added. We know of about 300 more meters of explored passage in Paraíso and Paraíso Abajo that will be wetsuit surveying. On our way out, we noticed the water level in the large

room had dropped a meter or so which allowed some of the old survey stations to become visible; however it would still be a swim to get to them. The side leads did not go, so we de-rigged all ropes back to the entrance. Since it was late afternoon, we decided to make a quick trip down to Paraíso Abajo for some passage azimuth readings and a visit to the Emerald Pool. A short traverse on the Paraíso Abajo shelf allowed us to rig a drop of about forty meters, with a narrow, dry landing, to the Emerald Pool. The plunge pool was a truly awesome place, a narrow gorge with over 230 meters of green moss and fern covered travertine waterfall and the huge Paraíso entrance above us. The clear-water Black Pool, in its overhung amphitheater, and lower canyon was thirty meters below us. Wayne and I photographed until the light became too dim.

We stayed one more night in the cave, spending a lot of the time brainstorming on how to get up the big flowstone falls and into the giant passage at the back. The next morning we packed out of camp and began the long process of de-rigging back up the



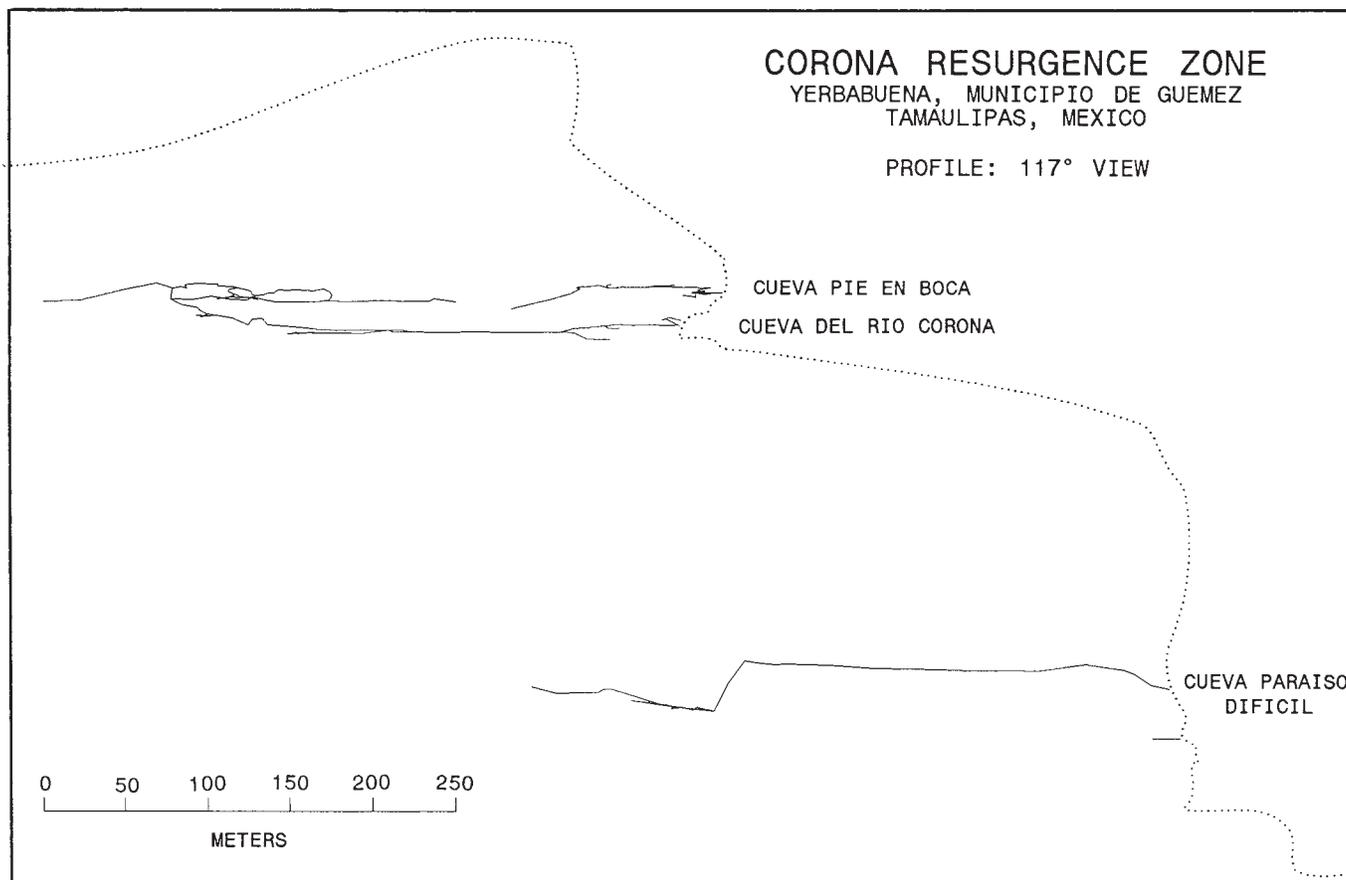
Lower drop to Paraíso Abajo resurgence. 1992 photo by Paul Fambro

waterfall. Terry, with the aid of Nancy and Mary, returned to Discovery Ridge with 35mm and 4x5 cameras to photograph our ascent. This was a lot of weight to carry in but the resulting photos were spectacular. Jerry, Wayne, Jeff, Mark and I reached the top of the waterfall and had all the ropes and tackle de-rigged by late afternoon. We decided we only wanted to make one trip up the steep and slimy climb back to the Corona cliff rope, even though it meant carrying two loads worth of gear. We struggled up through the slippery arroyo boulder field with full camp packs, small gear packs and both loose and duffed ropes. Upon reaching the Corona cliff rope we uncoiled the hundreds of meters of waterfall and cave ropes and piled them for the "pull out." We still had the extremely steep, one-hour Corona trail ahead of us with all our camp, vertical and "heavy metal" rigging gear. We made the slow climb to the truck and arrived in camp just before dark and just after the daily afternoon rainstorm.

The next morning, we pulled almost 800 meters

of rope up the Corona cliff and packed it away. Mary, Wayne, Nancy and Mark departed that afternoon. I had planned to photograph and video tape from Discovery Ridge but the afternoon clouds came in early. Instead, Jeff, Jerry, Terry and I toured the high karst above Yerbabuena which allowed Jerry to continue his geologic assessments of the area. The next day Terry and I hiked to Discovery Ridge for some quick photos and video before heading back to Austin. We made some excellent accomplishments toward our goals.

We now know that there is significant potential for another major cave and system in the area, located about 200 meters underneath the Calenturas/Corona system. With all the far reaching boreholes in Tecolote, who knows? We will definitely be back in late 1992 with goals to survey the water passages, connect Paraíso Abajo to the large room, climb the flowstone falls lead and surface survey the Paraíso, Corona and possibly the Calenturas entrances together with laser equipment.



ACKNOWLEDGEMENTS

The PEP would like to thank the following for contributions during 1992:

New England Ropes
 Harvey DuChene
 Skip Roy

INFIERNILLO '92 - CAMP I AREA

by Susie Lasko and Peter Sprouse



Jack Kehoe emerges from the Pyrite Tube, yet another loop in the Confusion Tube maze. 1992 photo by Peter Sprouse

It had been two and a half years since the last PEP mapping trip to Camp I. Numerous leads in the Arrakis section and elsewhere beckoned. The only potential problem was that the usual spring dry season didn't happen in 1992, so there was some concern about water levels. It was indeed raining as the seven expedition members were setting up camp at the roadhead below Infiernillo on 20 March. Along on this trip were Don Broussard, Michael Crawford, John Fogarty, Sue Fogarty, Jack Kehoe, Susie Lasko, and Peter Sprouse. The next day dawned clear, and the hike up the arroyo to the cave wasn't too slippery. Once up the entrance climb and established at Camp I, we found that the level of the Main Sump, our water supply, was up 5 meters over its normal level.

The next five days were spent mapping extensions and loops in several different parts of northern Infiernillo. Team strength varied from four persons

down to two, which proved practical in the easy and clean Confusion Tubes. Fortunately there were few medical problems, the worst being a bad case of poison ivy contracted by Sue. A mini-rescue occurred one night when the sleeping cavers were awakened by Don's distant cry for help from the camp latrine. The bulb in his only light source had failed while responding to those midnight urges. Always carry a back-up!

ARRAKIS

The Arrakis area is a high and dry zone southeast of the entrance which is a relatively new discovery. It had yielded several kilometers of new passage and numerous leads remained to be checked, so all seven cavers headed up there on the Survey Day One (22 March). A new specialty gear item being tested just for Arrakis was dust masks, which worked well, at

least for those without eyeglasses. A handline was rigged on the steep climb out of the D Survey, and on up the sloping main passage were several leads where Peter, John, and Don set to work, while the other four kept going farther in. The first lead for the threesome was at a point in the main passage where there was a pit dropping down on the right and a dome going up on the left, just before the Black Gyp Joint. Dale Pate had reported that a big passage could be seen at the top of this dome, so lead climbing gear had been brought this time. Peter went up to have a look and was able to chimney up a rift to the base of a tall circular dome. The walls were sheer and flaky, beyond the scope of resources on hand.



Sue Fogarty in the Jeweller's Vault, Arrakis. 1992 photo by Susie Lasko

Back in the main passage they backtracked to a steep tube on the left side, trending north. The Miami Vice Tube began as a dusty tube sloping steeply upward, quite prone to landslides. It split two ways then rejoined, ending in a pinch after about 120 meters. Returning to the main passage they decided to investigate the pit lead. This was a narrow and loose rift with pitches of 22 and 15 meters, at times barely

wide enough to squeeze through on rappel. At the bottom a passage named Tube 122 led off to the southeast, which they followed for a ways, and it kept going but got small. Their survey total was 233 meters in a 13 hour trip.

Meanwhile, Susie, Michael, Jack, and Sue had continued on up to the end of the Rattlesnake Trail, where the best leads were from the last trip in 1989. First they tied in the loop over to the Cotton Pickin' Passage, then mapped south. It started out as nice walking passage, then gradually lowered to a wide crawl with occasional bellying to avoid the helictite jungles. Jack, being the largest in the group, gradually lost enthusiasm as the passage got smaller. They turned around with 313 meters of survey.

It was Day 4 when Susie, Michael, and John went back up to Arrakis, first looking at a right-hand lead just before the Noogy Borehole. This, the Hoffpauir-Shrader Tube, pinched after 67 meters. Next they pushed the Cotton-Pickin' Crawl for 51 meters to a pinch with air. This crawl was a body-size tube thick with gypsum needles, which tended to accumulate in elbow pads, requiring periodic emptying. Then they went on to the back of the Rattlesnake Trail, pushing the bellycrawl terminal mud-filled room. The only way on was up a ceiling joint, the Arrakis Attic. This upper level quickly pinched in a formation choke which Michael opened up. He pushed it until it got so tight he could go no farther. Netting 101 meters there, they returned to a side lead called the Twilight Tube. This was accessed through the Crisp Crawl, a sharp pile of gypsum debris. The Twilight Tube seemed to be where the breeze went from the Rattlesnake Trail. Body sized, it led via three interconnecting pits down to small holes in the floor. With only a slight breeze it pinched, wrapping that lead up after 66 meters.

Susie returned to Arrakis on the last survey day with Don and Sue. First they pushed the Beach Tube near the start of Arrakis for about 45 meters to an apparent fill. At the top of the Arrakis main passage they stopped at the Black Gyp Joint, a perfectly straight passage which gets very narrow. Sue, who is extremely slim, soloed to the last station, and with some tight squeezing got through to slightly wider passage. She turned around at a climbdown with airflow. She turned back to rejoin Susie and Don, and they continued farther up through Arrakis to some leads at Elliptical Alley. The first lead was the Chocolate Tube, which went directly to a drop, Chocolate Pit. Having a look at the second lead they freeclimbed Not Much Pit, which got them to the bottom of Chocolate Pit without rope. But soon they were

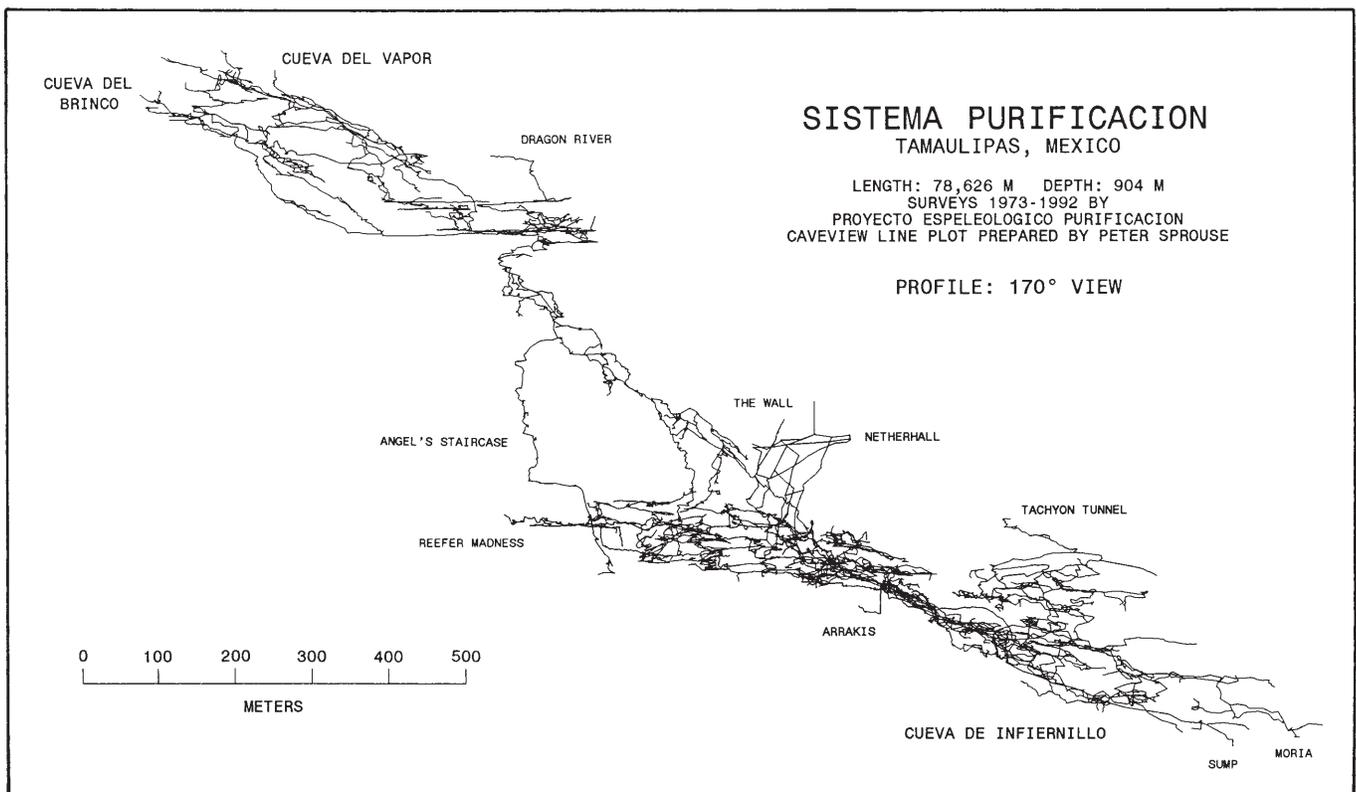
stopped at the top of another drop, and with no rope all they could do was tape it. Thus 8.5-meter-deep Shiner Pit now stands as an attractive lead, considering the good airflow. They returned to camp with 109 meters mapped.

THE TUBES - DECADE THREE

The Confusion Tubes constitute Purificación's largest labyrinth, and despite steady mapping since 1977 a lot of virgin passage remained. The tubes are close to camp, a lot of fun, and a mental challenge. On Day 2 the seven of us split into three teams to work on the eastern tubes. Susie, Sue, and Don went to an area at the south end of the maze called Up Yer Tube. This is the highest part of the tubes, dry and dusty. They mapped side leads and loops, netting 78 meters and ending at the bottom of a dome lead. John and Jack began a little farther to the north in Rubik's Tubes, the densest maze area of all. They managed to map north into more coherent passages, the Helium Tube and the Sodium Tube. These led to the Carbon Tube, which kept going, and the Tortilla Tube, which tied into the Original Tube twice. They mapped 188 meters, while nearby Michael and Peter got 141 meters. They had left Susie's team in the 17 Hour Tube and surveyed into the Right off the Bat Tube, trending north. First they mapped a loop, then up the small Snarly Tube to tie into John's team at the

Potassium Tube, where leads remain. Then they continued on down the Right off the Bat Tube to tee into a larger tube, scalloped bedrock as usual. Here, as elsewhere, old directional chalk marks could still be seen on the wall left by Charles Fromén in 1978. Soon they reached a boulder which nearly filled the tube, matching the description of a point repeatedly reached by Fromén and Mike Connally while trying to find their way out of the tubes. This Stop Rock, as it turned out, only needed a few hammer blows to pass. Soon they climbed down to tie into the Subspace Tube, right by the very beginning of the Tubes. The day's efforts had added 407 meters to the Confusion Tubes.

Day 4 saw one more mapping trip by a two--person team. These two were Jack, who was avoiding Arrakis, and Peter, who wanted to see just how confusing it could get. Taking the second right into the Space Station Tube, they mapped a short loop called the Pyrite Tube, as well as the lower level Methane Tube off that which kept going two ways. A bit farther along the SST they took the next tube on the left, the Burp Tube. This wound its way up vertically to pop out in the side of the Tortilla Tube, and the Belch Tube split off halfway along to loop back to Space Station Junction. Halfway along the Belch Tube was the Breathing Tube, where an arrow-straight 17-meter joint came out in the floor of the Original Tube. A thorough study of the notes took them to a lead off the Carbide Dump Tube, which led into the unmapped



part of the Carbon Tube. Above that was the Fortyniner Tube, which looped back into the Original Tube via Fred's Tube, and continued on up into Rubik's Tubes. Then it really got confusing when they found a whole new complex of tightly woven tubes off to the east of Rubik's Tubes. These would have to wait for another trip, and they quit with 234 meters in the book.



Michael lights up the sculpted bedrock of the East Loop. 1992 photo by Peter Sprouse

THE MISTY BOREHOLE

The Misty Borehole extends off the southwest corner of the Confusion Tubes, and leads to the major Babylon section of the cave. Day 5 saw two teams in the Misty Borehole, with the goal of working a slew of moderately interesting leads. Peter and Michael formed one team, Jack and John the other. First they mapped side leads and loops off the Sand Tubes, wrapping that area up. Then they moved on to the Manifest Destiny area, a complex zone with a number of old leads. Peter and Michael mapped down into Clarfield's blowing tubes lead, and were stopped by a 5 meter handline drop into large passage with airflow. This could well drop into Gnome Springs. Then they did a loop over to the other team, who were mapping

a passage which looped down to the Hose Tubes. John looked at the climbing lead out of Manifest Destiny and felt he could do it with some protection. Another time.

On Day 3 six cavers had gone farther along this route, bound for Babylon. But at the maze before the Hellenic Borehole they located a new passage going southeast and decided to do a leapfrog survey there. It went about 60 meters to a silt-floored room about 20 meters in diameter, the Birthday Room. From there a climb led up to a tube maze which was thoroughly surveyed, with the exception of a few tricky passages. On the way back Peter decided to lead the group on an alternate, and unfamiliar route back through the western tubes. This led through the Old Same Tube to the Shoetube, and with much trial and error reached the Balcony Borehole.

EXIT

By 27 March enthusiasm was a bit low in camp, except for Susie, who was anxious to check out Shiner Pit. It was decided to leave a day early and enjoy a road trip through northern México. Five days work had resulted in 2294 meters of new survey, making the cave 78,626 meters long. Still México's longest cave. At the entrance it began to pour down rain, making the hike down through the slippery arroyo quite tricky. The next day was taken up touring Linares Canyon, Cueva del Nacimiento de El Ebanito, and Pozo del Gavilán. Driving up Cerro Potosí, they nearly made it to the 3700-meter summit, but found the road blocked by a truck lodged in a snowbank. It belonged to the radar tower crew, and after helping push it out and carry beer up to the tower, the cavers were given a tour of the radar dome. This provides air traffic control radar for 200 nautical miles around. Many hours later camp was set in Casa Blanca Canyon, and the border crossed the next day at the empty new Colombia bridge.

PEP MEMBERSHIP LIST - AUGUST 1992

Tony Akers
Bob Anderson
Sheila Balsdon
Peter Bosted
Don Broussard
Page Callaway
Dale Chase
Allan Cobb
Jim Coke
Mike Connolly
Don Coons

Jon Credit
David Dodge
Harvey DuChene
William Elliott
David Engel
Paul Fambro
Bill Feely
Jim Feely
John Fogarty
Charles Fromén
Ernie Garza

Terri Gregston
David Hogenauer
Nico Hauwert
Louise Hose
Tom Iliffe
Jay Jordan
Pat Kambesis
Ray Keeler
Jack Kehoe
Joel King
Susie Lasko

David McKenzie
Jim McLane
Greg McNamara
Mark Minton
Bill Mixon
Jed Mosenfelder
Cyndi Mosch
Joe Oliphant
Dale Pate
Jim Pisarowicz
Mack Pitchford

Jack Ralph
Bru Randall
James Reddell
Dawn Reed
Jim Rodemaker
Skip Roy
Bill Rupley
Scott Scheibner
Peter Sprouse
John Stembel
Bill Stephens

Tag Swann
Terri Treacy
George Veni
Carol Vesely
Jack White
Win Wright
Corey Zeigler

CUEVA DE CALIFORNIA

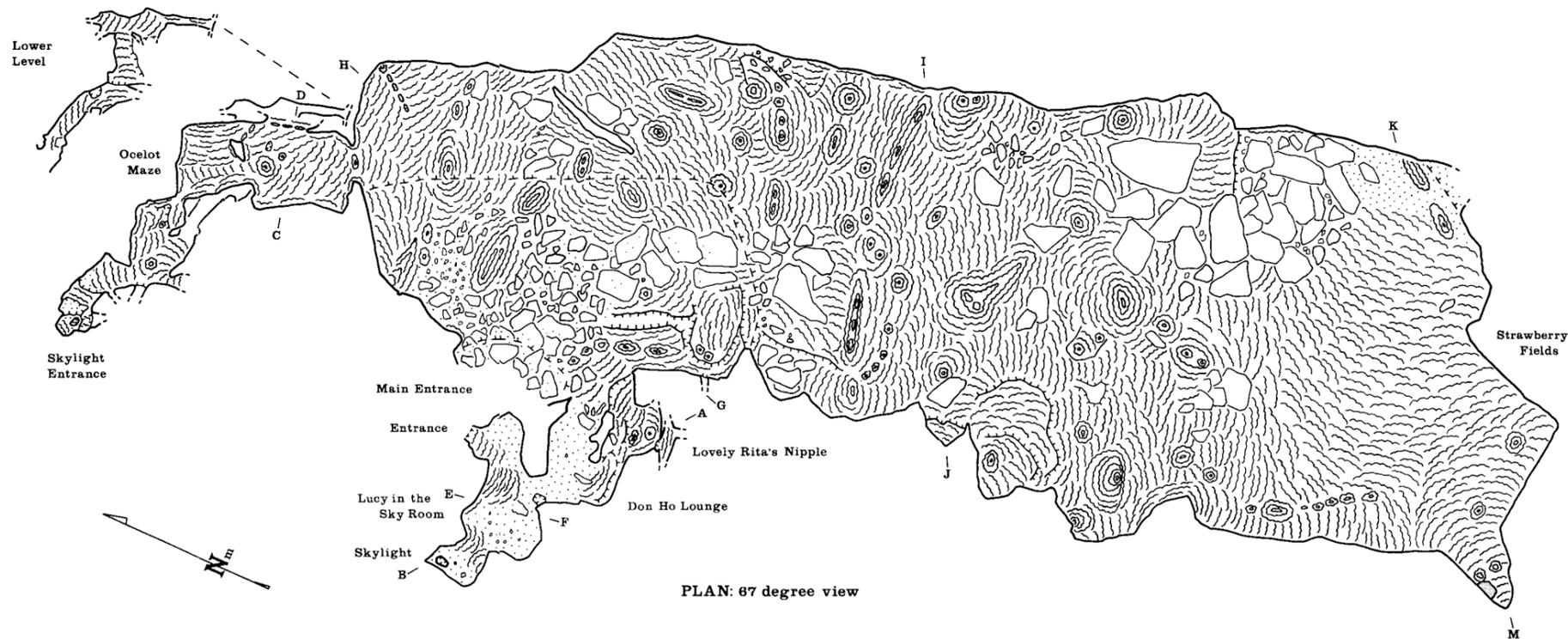
Rancho Nuevo, Municipio de Güemez
Tamaulipas, México

Suuntos and tape survey 9-10 April 1982
Jerry Atkinson, Jim Pisarowicz, Peter Sprouse, Terri Treacy

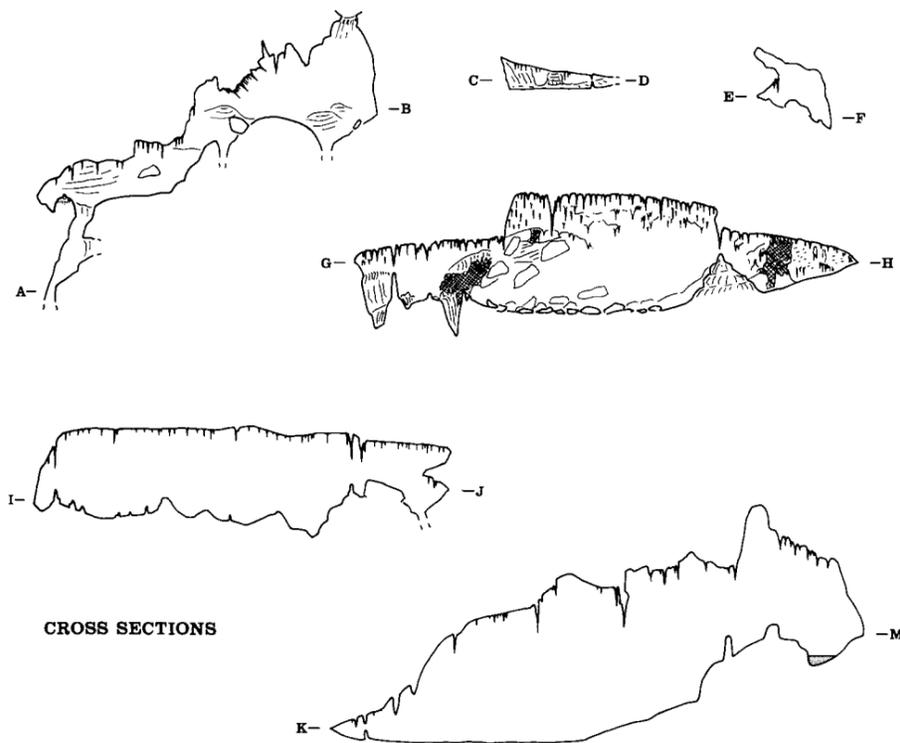
Drafted by Peter Sprouse
Plotted by ELLIPSE

Length: 250 meters Depth: 42 meters
UTM coordinates: X= 454,495E Y= 2,642,230N Z= 2520

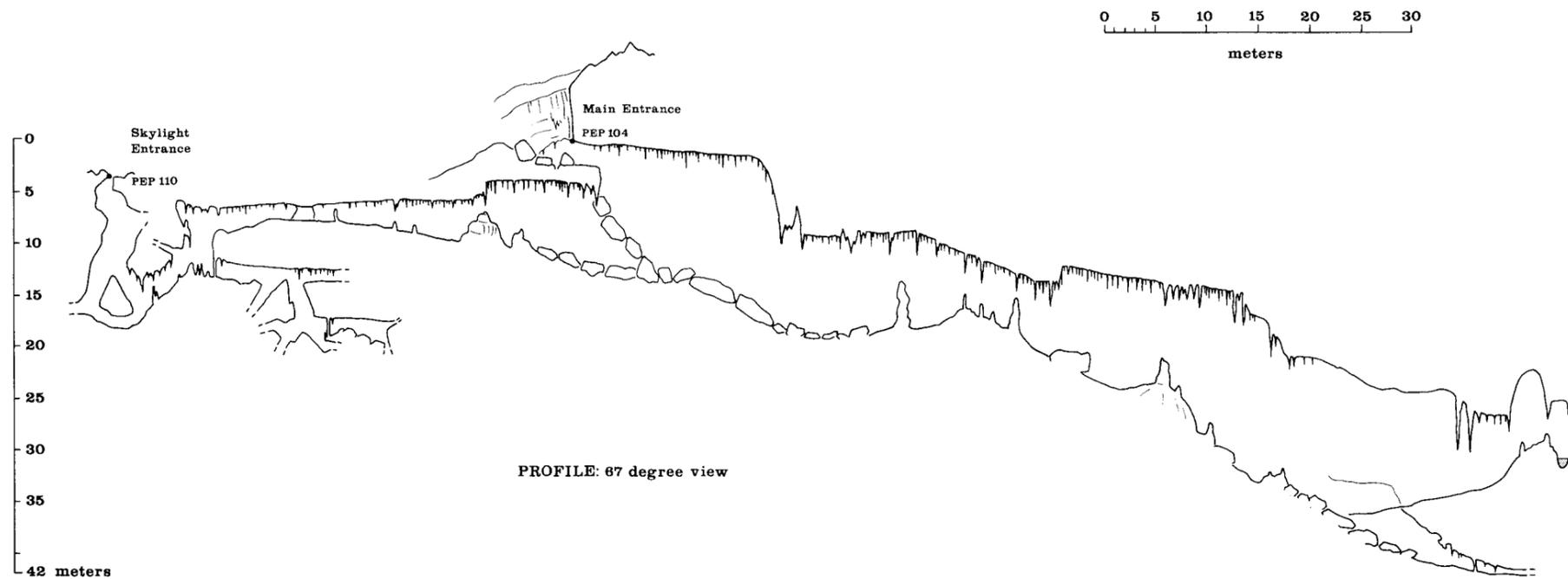
PROYECTO ESPELEOLOGICO PURIFICACION



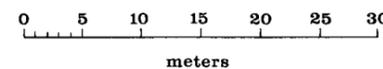
PLAN: 67 degree view



CROSS SECTIONS



PROFILE: 67 degree view



PURIFICACION AREA CAVE DESCRIPTIONS

by Peter Sprouse

Faunal lists compiled by James R. Reddell



Cueva del Vandalismo. 1982 photo by Peter Sprouse

CUEVA DE CALIFORNIA PEP 104, 110
Rancho Nuevo, Tamaulipas
Length: 250 meters Depth: 42 meters
UTM coordinates: E 454,495 N 2,642,230

Cueva de California is located 3000 meters north of the village of Rancho Nuevo at an elevation of 2520 meters. At the end of a spur road off of the Revilla-La Cueva road is a footpath which goes about 900 meters to the cave. The entrance is in a collapse dolina on a promontory overlooking the Yerbabuena Valley. The remains of an old house are just outside the entrance. This entrance is 10 meters wide and two meters high, with a steep dropoff of breakdown boulders just inside. This gives access to the main chamber of the cave, which is 120 meters long, 30-45 meters wide, and 10-15 meters high. It is profusely decorated with stalactites, stalagmites, and columns, some of which have been broken by vandals. At the south end of the room a flowstone slope named Strawberry Fields pinches out in a very low crawl, the deepest point in the cave. On the west side of this slope is the only significant pool

of water in the cave, which is in fact the only source of good drinking water in the Rancho Nuevo area.

Two side passages extend off of the main chamber. One of these goes off to the east just inside the main entrance. This ends up at an unentered skylight at the Lucy in the Sky Room. The other side passage goes off the north end of the main chamber into the Ocelot Maze. This is a complex formation maze which ends up at another skylight entrance which can be free-climbed.

Cueva de California was one of the first caves visited by cavers in the Purificación area. In mid-April 1973 separate groups of cavers from the Greater Houston Grotto and the Pan American Speleological Society ran into each other at Puerto Purificación, and decided to join up for prospecting farther up the mountain. The PASS group was led by John Mikels, and the GHG group included Mike Connally, Charles Fromén, and Jim McLane. Mike recalls scouting the area on motorcycles and stopping to ask about caves. "Go to California" they were told, and it took awhile to realize the locals weren't just trying to get rid of them. They got a guide to the cave and explored the main chamber along with the PASS cavers. California was also visited sometime in the early 1970's by David McKenzie and other Austin cavers.

The cave was revisited on 12 May 1977 by Ralph Batsche, Mike Connally, Charles Fromén, Peter Sprouse, Terri Treacy, and Harry Walker. They explored to the left into the Ocelot Maze, discovering a small skylight entrance. They dug this open from the inside. The cave was not surveyed until five years later. Jerry Atkinson, Jim Pisarowicz, Peter Sprouse, and Terri Treacy mapped it on 9-10 April 1982.

(foldout map)

Leeches: *Diestecostoma magna* Moore.

Spiders: *Phonotimpus* sp.

Phrurotimpus n.sp.

Neoleptoneta n.sp.

Nesticus rainesi Gertsch.

Modisimus rainesi Gertsch.

Harvestmen: *Leiobuninae* n.gen. nr.

Nelima and *Paranelima*, n.sp.

?*Nelima* n.sp.

Springtails: *Pseudosinella reddelli* Christiansen.

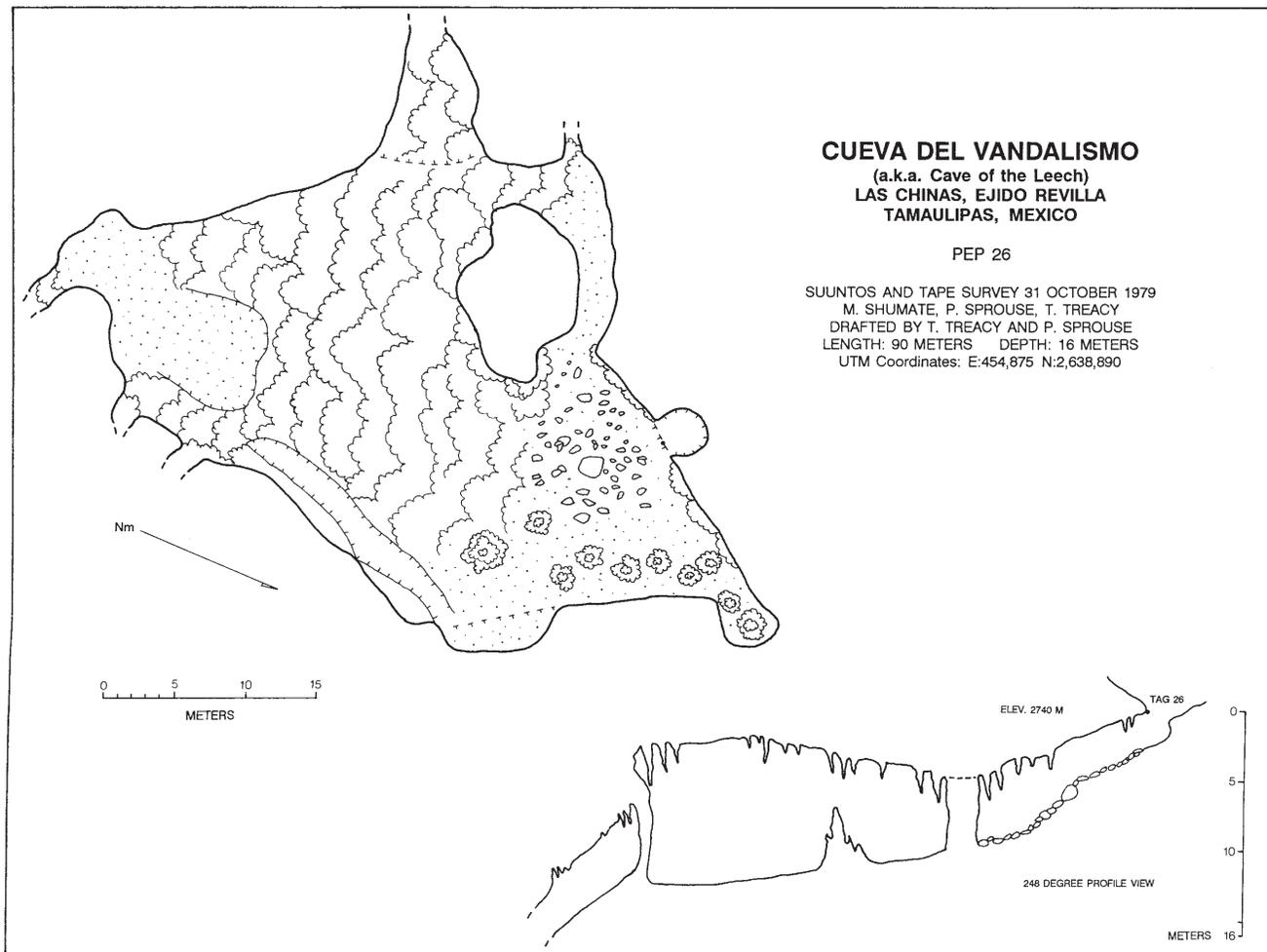
Ground beetles: *Mexaphaenops mackenziei mackenziei* Barr.

Round fungus beetles: *Ptomaphagus (Adelops) mckenziei* Peck.

Centipedes: *Lithobiomorpha* undetermined.

Millipedes: *Rhachodesmidae* genus and species.

Rhysodesmus sp.



CUEVA DEL VANDALISMO

PEP 26

Las Chinas, Tamaulipas

Length: 90 meters Depth: 16 meters

UTM Coordinates: E 454,875 N 2,638,890

This cave is located 1000 meters east-southeast of Rancho Nuevo, at an elevation of 2640 meters. It is along a spur road which passes northeast of the Mesas Juárez tower. The entrance is a 1.5-meter-diameter opening on the west side of the road. This gives access to a wide rubble slope, which soon flattens out into a wide flowstone chamber. A trench against the far wall drains into several small leads at the back which were not pushed. Formations in the cave have been heavily vandalized. The first cavers to explore this cave were from the Pan American Speleological Society, around mid-April 1973. When they mapped it in May 1973 the team included Jack Conklin, John Mikels, Nick Morales, and Mike Padgett. The cave was resurveyed on 31 October 1979 by Mark Shumate, Peter Sprouse, and Terri Treacy. On a collecting trip on 15 March 1982 David Honea collected a small troglobitic scorp-

on, the second variety in the area and a new genus.

Harvestmen: *Hoplobunus* sp.

Scorpions: *Typhlochactas cavicola* Francke.

Spiders: *Euagrus* sp.

Cicurina n.sp.

Neoleptoneta n.sp.

Nesticus rainesi Gertsch.

Modisimus reddelli Gertsch.

Camel crickets: *Exochodrilus* sp.

Ground beetles: *Mexaphaenops mackenziei mackenziei* Barr.

Toed-winged beetles: Ptilodactylidae genus and species.

Centipedes: Lithobiomorpha undetermined.

Geophilomorpha undetermined.

Millipedes: *Mexiterpes calenturas* Shear.

POZO DEL ENCINO DOBLE

PEP 167

Cuautemoc, Nuevo Leon

Length: 15 meters Depth: 9 meters

UTM coordinates: E 452,963 N 2,641,210

This pit is located 2700 meters south-southeast of Cuautemoc at 2410 meters elevation. It is on the south side of a road, just south of PEP 163. The pit entrance is in a shallow sink surrounded by oak trees. The 4-meter-diameter pit drops 9 meters to a floor covered

in leaf litter. Pozo del Encino Doble was explored and sketched by Peter Bosted and Peter Sprouse on 3 January 1987.

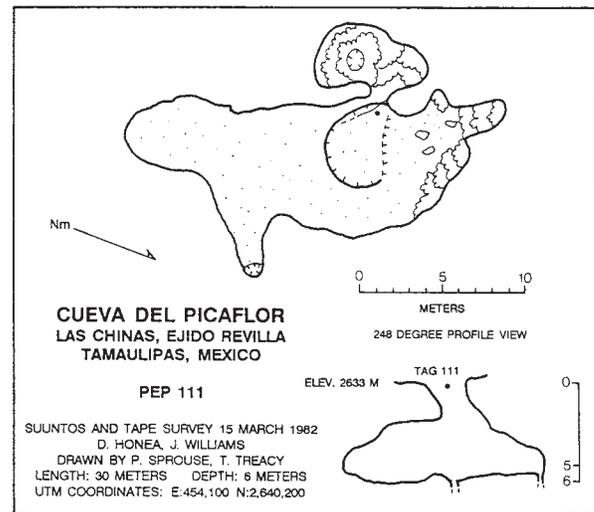
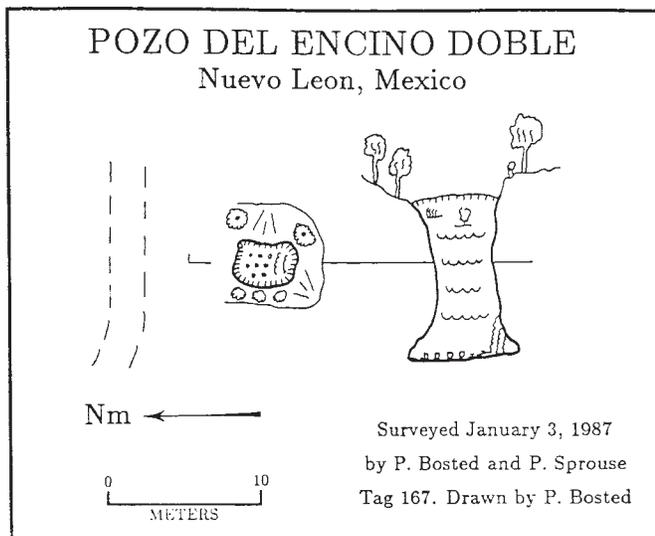
Spiders: *Erigone* sp.

Springtails: *Tomocerus (Pogonognathellus) flavescens* Tullberg.

Slender entotrophs: Campodeidae genus and species.

Insects: Insecta undetermined (larvae).

Centipedes: Geophilomorpha undetermined.



Rancho Nuevo road, in a prominent drainage called La Pascuala. The entrance shaft is 13 meters in diameter and drops 106 meters to a flat rubble floor. Several inlet shafts join the main one on the way down. A window off the bottom of the entrance shaft gives access to the second drop. This is a 20 meter rappel to a flowstone ledge, then a further 19 meter drop to a dirt-fill bottom. Temperature here was measured at 10° C.

Sótano de la Rama was located by Jim Pisarowicz on 15 April 1981 by Jim Pisarowicz. On 20 April Louise Hose, Jim Pisarowicz, Peter Sprouse, and Andy Waddington descended the entrance drop. Two days later they did the two remaining drops and finished mapping.

Spiders: *Nesticus rainesi* Gertsch.

Modisimus reddelli Gertsch.

Springtails: *Pseudosinella reddelli* Christiansen.

Ground beetles: *Mexaphaenops jamesoni* Barr.

Mexaphaenops mackenziei gracilis Barr.

Centipedes: Lithobiomorpha undetermined.

Euagrus sp.

Cicurina n.sp.

Neoleptoneta n.sp.

Nesticus rainesi Gertsch.

Modisimus reddelli Gertsch.

Camel crickets: *Exochodrilus* sp.

Ground beetles: *Mexaphaenops mackenziei mackenziei* Barr.

Toed-winged beetles: Ptilodactylidae genus and species.

Centipedes: Lithobiomorpha undetermined.

Geophilomorpha undetermined.

Millipedes: *Mexiterpes calenturas* Shear.

CUEVA DEL PICAFLOR

PEP 111

Rancho Nuevo, Tamaulipas

Length: 25 meters Depth: 8 meters

UTM coordinates: E 454,100 N 2,640,200

This cave is located 100 meters north of Rancho Nuevo, at an elevation of 2633 meters. The sloping entrance descends underneath the dripline into a room 18 meters long and 4 meters wide. Two passages heading off to the right and left both end within a few meters. Cueva del Picaflor was located by David Honea and Jeane Williams in early March 1982. They explored and surveyed it on 15 March 1982.

Spiders: *Modisimus reddelli* Gertsch.

Harvestmen: Leiobuninae n.gen. nr. *Nelima* and *Paranelima*, n.sp.

SOTANO DE LA RAMA

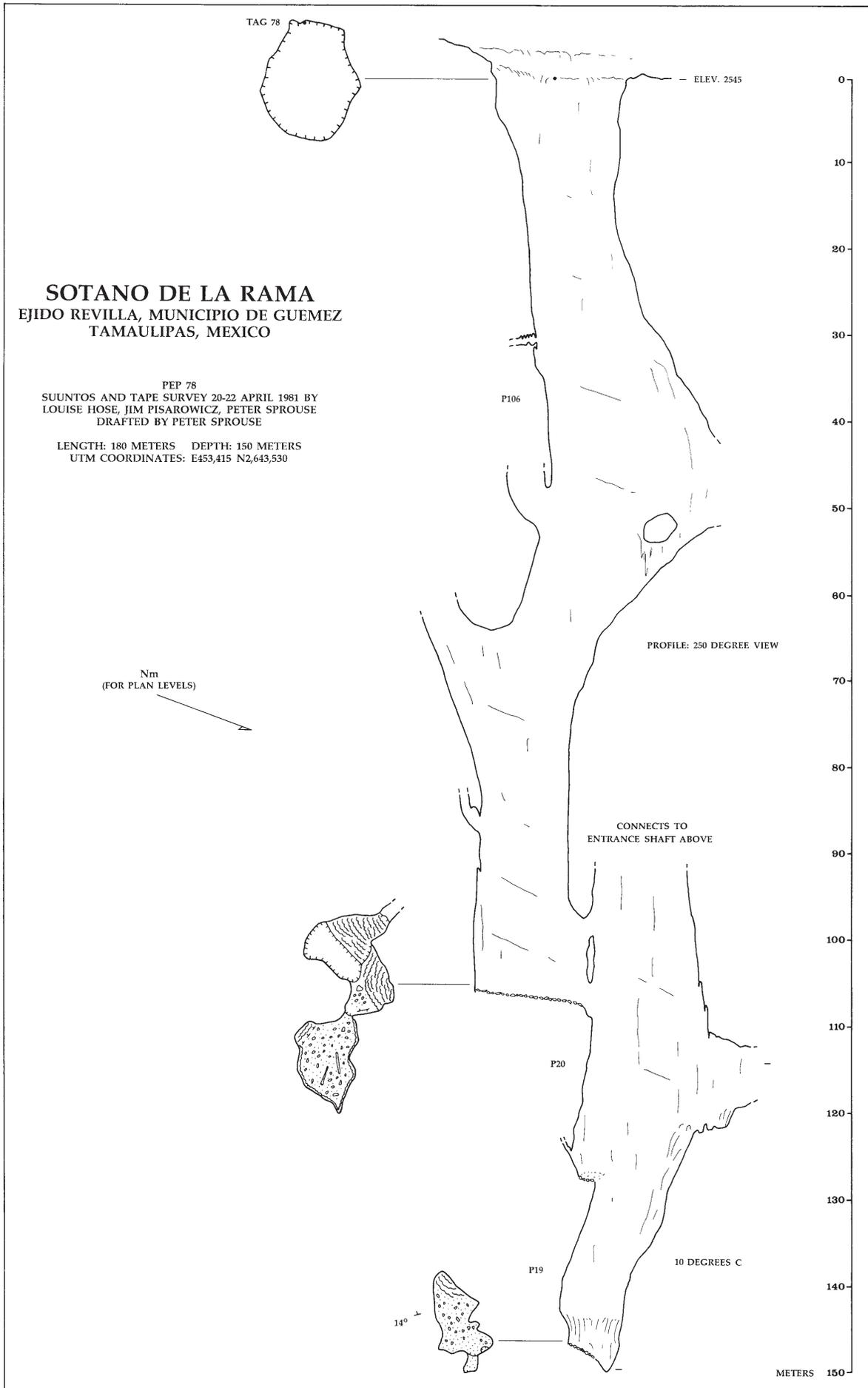
PEP 78

Rancho Nuevo, Tamaulipas

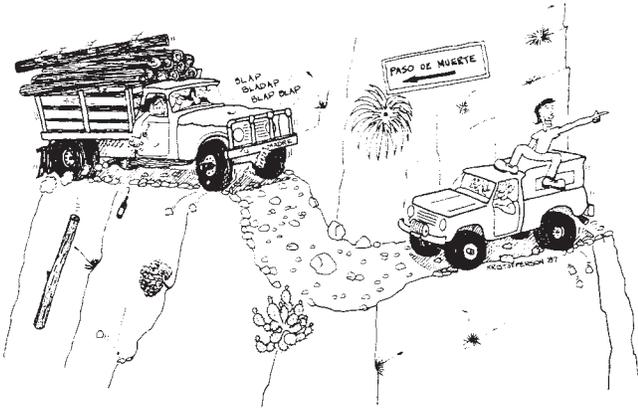
Length: 180 meters Depth: 150 meters

UTM coordinates: E 453,415 N 2,643,528

This pit is located 4500 meters north-northwest of Rancho Nuevo, at an elevation of 2545 meters. The pit is along a spur road 200 meters north of the Revilla-



TRIP REPORTS



Destination: Conrado Castillo, Tamaulipas

Date: 19 - 29 December 1992

Personnel: Dale Chase, Allan Cobb, Michael Crawford, John Fogarty, Nico Hauwert, Jed Mosenfelder, Peter Sprouse, Cathy Winfrey

Reported by: Dale Chase

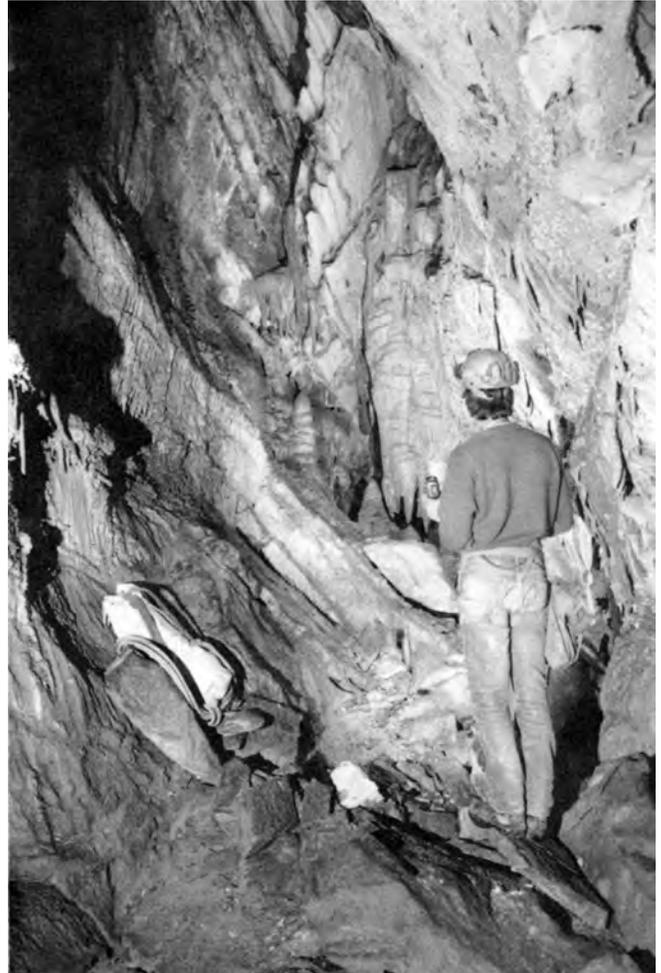
You've got to kiss a lot of frogs to find a prince.

20 Dec.- Peter Sprouse, Jed Mosenfelder and I left Austin for the border. Mexico recently fired 3000 of its customs agents in an attempt to eliminate corruption and increase efficiency. The second goal was pronounced a dismal failure for the time being as we inched our way through a line up from 4:00 a.m. till 7:30 a.m. with several hundred Mexican Americans on their way to spend Christmas in the old country. We were almost the only Gringos in the line, and definitely the only people with T-shirts in Spanish.

21 Dec.- Dusk the next day found us at Santa Vérula, the sawmill for the Ejido of Conrado Castillo. The flat soft sawdust pile was too tempting to pass up, so we spent the night there, being invaded by thousands of ravenous fleas, which continued to haunt us for most of the trip. A tubeless tire is leaking. Peter fixes it with a scrap of discarded innertube, and puts in 32 pounds of air. A successful fix, as on arrival at the fieldhouse the pressure is up to 34 pounds, due to the higher elevation.

22 Dec.- The next morning found us surveying a small resurgence cave near Galindo, named Cueva Magnolia. This cave contained vampire bats and turned us back at a near sump, drafting air, but we pronounced it more feasible in drier weather. We did some recon and found another little horizontal cave with about 30 meters of passage and 3 entrances. The shape of the cave on the sketch was a squashed "W"

prompting the name Cueva Cassiopeia. This cliff face also contained several excellent shelter caves which showed evidence of domestic animal habitation. The mere thought of more fleas sent us scurrying on. We arrived in Conrado Castillo in the early afternoon. We set up camp, swept out the buildings, sprinkled flea powder generously about, put a tarp over the end of the cookhouse roof, got water and still had time for a quick recon on Cerro Zapatero, above the spring.



Dale Chase lights up passage in middle levels of Sótano de la Cuchilla. 1991 photo by Peter Sprouse

23 Dec.- We wake up and compare flea bites. Sótano de la Cuchilla (the Edge) beckons. This cave is on C. Zapatero, almost directly over the Dragon River section of Sistema Purificación, and bottoms out about 60 meters above it. It is 5 drops to the bottom, longest 30 meters, with a fair amount of horizontal passage and a sizable room. We added 182 meters to bring it to 1306 meters long. On the way in, at the top of the Chevron drop, we replaced the two 12 year old rusty bolts with two new bolts, well greased. One route part

way down had not been pushed. Two short but interesting drops, with very clean with floors of folded chert, led to a horizontal passage required some serious hammer persuasion. Peter persuaded it, but it lead back into surveyed passage. We spent a fair bit of time surveying some parallel horizontal tubes in the middle part of the cave. They also lead back into surveyed passage. The cave seems to consist of ancient horizontal phreatics, at different levels intersected by more recent vadose, headed down. The trip out was uneventful till derigging the second drop (30 meters), we found that the rope has been chewed on by a rat. Back at camp the rest of the crew had arrived; Allan, John, Cathy, Michael, and Nico. We tried to figure out how to share the fleas equitably.

24 Dec.- We woke up to cool foggy weather and intermittent rain. Cueva del Borrego (Sheep Cave) won the nod for this day. Some of the lads noticed that the village raises fine sheep. It is a short walk from the fieldhouse, on the other edge of the village. This is a flowstone and popcorn covered 3-D breakdown maze, that is probably, but not yet, connected to Purificación. Actually a short cave with a lot of survey crammed in. We added 168 meters to make it 1358 in all. How one could ever actually draw a map that will make sense is a mystery. Going in, Allan Cobb was a bit worried about his right knee which hasn't been caving since being dislocated in a Guatemalan cave. The neoprene knee brace seems to work quite well, and we needn't have worried about the right knee, as it was the left knee that dislocated this time. There was a fair bit of groany moaning (by Cathy) as the kneecap was tractioned back into place. It was near the entrance, so Allan crawled out, mostly under his own steam. This put us out of the cave with an hour and a half of daylight left, so Jed, Michael, and I took off uphill on the quest for a higher entrance. A moderately steep but pleasant climb of 300 meters put us onto the flat sinkhole covered top of Cerro el Vivero, the mountain due south of the village. On the way down, near the top, we found two pits estimated to be 20-30 meters. They were immediately named Sótano Deslocalizado (Dislocation), due to the day's mishap. Optimism abounds.

25 Dec.- The "big trip" of the expedition, in the Brinco Entrance to the Dragon River. For those unfamiliar with Brinco, it is a walk in entrance, into a large, very old, dry passage. Near the end of this passage we changed into wet suits, then into the Chute, a squeezer, and the Crack of Doom, a tight but short section leading to a lot of smaller (still mostly walking) beautiful, clean, wet passage. There are some

long free climbs between sections of wading, swimming, and crawling through ducks. Then out into The World Beyond, a large sparkling clean borehole, exquisite. More wet stuff to the large dry Helictite Paradise, then Camp VI and the Mud Funnels, with a short drop into the Dragon River level of the cave. At this point the passage sumped, bah. We had a sit down just before the first duck on the way out and tried to decide if there were any leads worth pursuing in this part of the cave. We heard a distant roaring sound and found it came from air whooshing through a small side passage with a one square inch constriction. The roar seemed to say "persuade me", so we tried. Some enlargement occurred, but the game was probably not worth the candle. We covered 2 1/2 clicks each way, with a wee project, in 11 hours. Exploration in Brinco is an endurance game, a sporting (fun sporting, not panic sporting) cave, a friendly sort of cave with a warm wet suit.

26 Dec.- Cathy drove Allan and Nico back to civilization. The rest of us headed up Cerro el Vivero to drop Sótano Deslocalizado, found on the 24th. We found the pits again with no trouble. They connected at the bottom with one small blind room leading off. Total depth is 40 meters. John and I wandered around the extensive flats on top of the mountain without finding anything. The open pine and oak forest was fragrant and delightful to walk in, but no entrances were found. Peter, Michael and Jed reconned the ridgeline heading down to the northwest. They found and dropped one more blind pit, 32 meters deep, named Pozo Pinto, after our recently adopted but ever so faithful dog.

27 Dec.- We split into 2 groups again. John and Michael investigated a headwall at the end of an arroyo which seemed a likely place for a resurgence of the Dragon River section of Sistema Purificación. They spent the day roping their way down a series of cliffs, but ran out of rope for the last short drop. Peter, Jed, and I reconned the west slope of the ridge that heads down from Cuchilla. Peter found a short cave that is probably a rat's entrance into Cuchilla. Eight meters in 3 stations, named Cueva de la Tortuga (are you a Turtle?). Peter found a 9-meter blind pit which we named Pozo Lucha Culebra (Snake Fight), after a rope coil. Peter asked us to direct him on the mountain so that he can't be accused of hogging the glory. We debated and decided, and 15 meters of walking brought Peter to another pit. This one was named Pozo Inteligente for reasons too obscure to mention. It is dirt-lined for the first 8 meters and seems to be a recently collapsed opening. A vertical

squeeze opens into a largish pit with a walk around natural bridge. Depth is 48 meters to a small inlet passage that won't get bigger and goes 80 meters to pinch.

28 Dec.- We packed up, distributed Christmas presents to all the kids in the village, said adios, and headed down the mountain to the arroyo where John and Michael ran out of rope the day before. The one more length of rope did indeed put us below the headwalls. One resurgence was found, but the opening was too small to get into, no draft noticed. Now the hardest part of the trip, drive and drive back to Austin. At Peter's house we all fondled the little dog, hoping the last of our fleas would find him more attractive.

So, 'twas a fine trip even though the big ones got away.

Destination: Jaumave, Tamaulipas

Date: 15 - 19 January 1992

Personnel: Michael Crawford, Susie Lasko, Peter Sprouse

Reported by: Peter Sprouse

15 Jan.- We leave Austin in the arms of a howling norther.

16 Jan.- In a drizzle we arrived in Victoria for shopping. Drove up Highway 101 to Altas Cumbres where patches of snow lingered. There we mapped a tectonic rift cave which we knew of, now named Cueva de la Nieve. Then we went on to La Reforma where we made tentative arrangements to see a cave with Ignacio on Saturday. We rolled on to Jaumave for a meal, then we looked up my acquaintance Leonardo González. We all drove a few kilometers south to San Lorencito to see a cave he knew of. It was developed in a 20-meter-thick travertine formation on the north side of the Rfo Guayalejo. A brief poke revealed walking passage with a deep guano floor. The locals report a squeeze with "dos kilómetros" of passage beyond. We drove Leonardo back to Jaumave and decided to get a hotel room for the night.

17 Jan.- We drove back to Reforma where we set off with Julio for the Rancho Sartenejo. Most of the way up the mountain Ignacio caught up with us. On the Mesa la Rabona we reached the cave, an incon-



Cueva Rabona entrance passage. 1992 photo by Susie Lasko

spicuous hole on a hillside. Cueva Rabona was a formation cave with quite a few vampire bats. An 8 meter drop followed by a 12 meter rift pitch ended in a choke. We hiked down in the dark and drove back to Jaumave.

18 Jan.- Fixed a flat at the vulka then drove north to San Antonio. The flats looked muddy getting to San Marcos so we decided to go up to Pino Solo instead. We met José López on his way to Victoria, and he couldn't be persuaded to guide us. So we hiked on and looked at the tectonic karst around the pond, then hiked north for 2000 meters along the ridge. The clouds blew in cold and wet, so we retreated. We stayed in Victoria that night at the Hotel Condesa.

19 Jan.- Drove back to Austin.

Destination: Corona area, Yerbabuena, Tamaulipas

Date: 22-30 November 1991

Personnel: Jerry Atkinson, Wayne Bockleman, Jon Cradit, Harvey DuChene, Dave Engel, Paul Fambro, Bill Feely, Jim Feely, John Fogarty, Terry Gregston, Bronwyn Hamilton, Jeff Horowitz, Louise Hose, George Love, John Peters-Campbell, Steve Miller, Mark Minton, Bill Mixon, Peter Quick, Dawn Reed, Ron Ryan, Bill Stephens, James Rice, Peter Sprouse, Mary Thiesse, Nancy Weaver, and others.

Reported by: Peter Sprouse

22 Nov.- It was midnight before my riders Dawn Reed and Harvey DuChene got in at the airport, late from Denver due to snow. We set out at high speed in pursuit of the numerous vehicles ahead of us.

23 Nov.- At the border we met Dallas cavers who told us of silly new paperwork requirements which delayed us an hour. We caught up with the line of caver vehicles at the Rfo San Pedro. We stopped for tacos at Yolanda's and visited with Gabino before driving on to Yerbabuena. Damped up on the point with the other vehicles, with a spectacular view of the Corona canyon. Paul, Terry, Jeff, and Jerry had improved the Corona Resurgence trail over the two previous days and scouted a rig point for the cliff cave rappel.

24 Nov.- Mark and Wayne checked a 35-meter pit near camp above the West Cliff lead, which they also checked and found to be only a shelter. Jon Cradit, John Fogarty, and George Love mapped the upper cave above Cueva del Rfo Corona for 200 meters to a diveable sump. They named it Cueva de Pie en Boca. Peter Quick, Bill Stephens, and Steve Miller rechecked Turkey Sump in Calenturas but couldn't find a way on, save a great dive lead. We led Jim Bowden's dive team (Ann, Karen, Eric, and Allen) through the cave, then Dawn, Harvey, and I looked for leads off of the Monkey Bars. We mapped a dirt-floored crawl about 125 meters long called Brown Tangerine.

25 Nov.- The lower cliff crew of Jerry, Jeff, Mark, Paul, and Wayne successfully descended the waterfall to just below the new entrance which would require a lead climb to access. John, Dawn, Harvey, and Bill Stephens mapped the remaining water passages in the Corona, while Louise Hose, Ron Ryan, John Peters-Campbell and I worked on enlarging a crawl-

way lead. It needs more work. Jon, Peter, Steve, and George tired to grapple into the lower entrance (Pie en Boca) which led over to it, but it didn't go.

26 Nov.- Harvey, John, Dawn, Bill, Ron, and I drove down to look at the big new entrance (Cueva Paraíso Difícil), a spectacular sight. Then we went into Calenturas and did clean-up survey in the Hong Kong tube maze. John pushed a tight bedding crawl, but it didn't go.

27 Nov.- Bowden's dive crew mapped about 500 meters of new and old passage in upstream Calenturas, finding the way on which had eluded Todd Sympton. The lower cliff team successfully reached the Paraíso entrance, exploring 300 meters of borehole to a 30-meter drop. I led a large group over to El Violín, clearing a lot of blockage off the old road. We rigged Cañon la Cueva and I rappelled 150 meters to a forested ledge. Just before dark I located an entrance and with the cut rope-tail reached it. I radioed for John to come down to help map Cueva de El Violín. It was a 150-meter-long bat cave with all leads ending in sumps. John and I did the long climbs up in the dark and we made it back to camp at 5:00am.

28 Nov.- Peter Q. and Steve Miller finished a crawl in Pie en Boca and tied in the surface survey. James Rice, Bill Stephens, and I tried to access another cliffside entrance above the Corona pool, but it appeared to be only a shelter, so we surface-mapped back up to the ridge.

29 Nov.- Peter and Steve left in the morning for the long drive back to Detroit. A large group of us rappelled down to Paraíso. Cradit, Stephens and I mapped in from the entrance while Fogarty, Minton, Bockleman and Fambro mapped below the pit. They found a large room with a high climb lead continuing on, and a wet downstream lead trending back toward the entrance. We finished up quickly and hiked back up to camp. Later that night embers from Quick's campfire ignited in a brief blaze.

30 Nov.- We awoke before dawn to the cry of "fire" and proceeded to stomp once again. After sunup we hauled ropes up and packed to leave. Had lunch at Gabino's again and he took us to the pit we'd tried to find in March. Sótano de Cerro de la Cruz turned out to be a fissure maze about 200 meters in length, with airflow likely caused by multiple small entrances. We dined in Victoria and drove north to camp at the Río Grande, and on to Austin the next day.

PROYECTO ESPELEOLOGICO PURIFICACION

STANDARD CAVE MAP SYMBOLS, 1991

PASSAGE SYMBOLS

	Passage walls
	Lower level passage
	Unsurveyed or indefinite walls
	Breakdown walls
	Pit; entrance pit if so indicated

FLOOR SYMBOLS

	Bedrock floor
	Mud or clay
	Sand or silt
	Gravel
	Rounded stream cobbles
	Talus
	Breakdown
	Large breakdown drawn to shape and scale
	Guano
	Archeological material
	Organic debris
	Trail
	Sharp drop in floor, down in hatchured direction
	Slope contours, non-specific intervals

CEILING SYMBOLS

	Drop in ceiling, hatchures point toward low ceiling; also entrance dripline
	Dome

WATER SYMBOLS

	Course and direction of flowing stream
	Course and direction of intermittent stream
	Standing water
	Intermittent or relict pool
	Sump (sketching use)
	Sump (drafting use)

STAL SYMBOLS

	Flowstone on floor, with bulged side downslope
	Flowstone mound, stalagmite, or column
	Rimstone dams (gours), drawn to shape and scale when possible
	Flowstone on walls

EXTERNAL SYMBOLS

	Cross-section of passage, viewed in direction shown by half-barbed arrow and rotated to horizontal
	Typical airflow direction
	Scallop direction
	Pit depth in meters
	Entrance tag with ID number
	Strike and dip of strata in degrees
	Vertical joint
	Dipping joint
	Fault, D side moved down relative to U side

