AMCS ACTIVITIES NEWSLETTER

Number 23 May 1999


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The *AMCS Activities Newsletter* is published by the Association for Mexican Cave Studies. This issue was edited by John Stembel, with help from Bill Mixon, Oscar Berrones, Robin Havens, Jim Kennedy, Laura Rosales, and Cathy Winfrey.

The *Activities Newsletter* seeks articles and news items on all significant exploration and research activities in the caves of Mexico. Photographs suitable for the covers and other full-page applications are also sought. They need not relate to an article in the issue, but the original slide or negative must be available on request for printing full-page photos. All material may be sent to the AMCS address. Those planning an article may contact the AMCS for the name of the editor and the schedule for the next issue. Better yet, just send it now.

The Association for Mexican Cave Studies is an informal, nonprofit organization dedicated to the exploration, study, and conservation of the caves of Mexico. All previous issues of the Activities Newsletter are available. Write for a list of publications.

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Front cover

Fernando Vanoye approaches a rebelay in Pozo Adrenalina near Zaragoza, Nuevo León. *Photo by Peter Sprouse.*

Back cover

Deborah Brown in Cueva de Constantín, Nuevo León. *Photo by George Veni.*

Frontispiece

Antonio Soriano inspects the bat that gave its name to Idionycteris Canyon in Sumidero Suchomimus, Nuevo León. *Photo by Peter Sprouse.*

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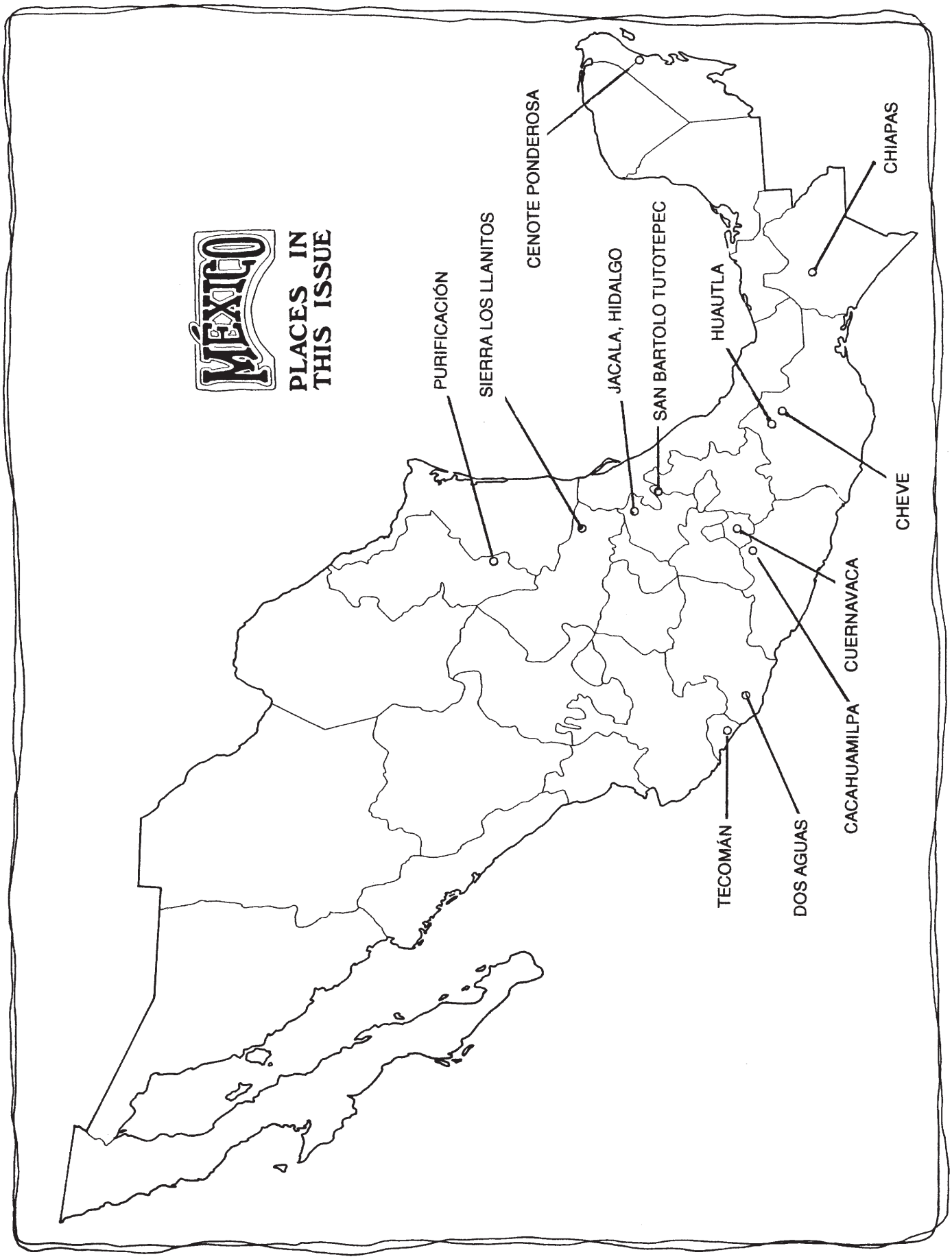

MÉXICO
PLACES IN THIS ISSUE
PURIFICACIÓN
SIERRA LOS LLANITOS
CENOTE PONDEROSA
JACALA, HIDALGO
SAN BARTOLO TUTOTEPEC
HUAUTLA
CHIAPAS
CHEVE
CUERNAVACA
CACAHUAMILPA
DOS AGUAS
TECOMÁN

MEXICO NEWS

Compiled by Bill Mixon

CAMPECHE

Past biological studies in the Yucatán Peninsula focused on large arthropods. Two expeditions in 1996 and two in 1997 explored several caves, the most important of which were **Xtancumbilxunaan** and **Actun-Kin**.

In all the caves, samples of soil, guano, and detritus were taken, and more than one hundred different species of micro-arthropods were found. The most interesting are Pauropods, Diplopods, many mites of Cryptostigmata and Mesostimata orders, and new species of Collembola. *Source:* José Palacios-Vargas and José Gamboa-Vargas, *Proceedings of the 12th International Congress of Speleology*, volume 6, page 85, 1997.

CHIAPAS

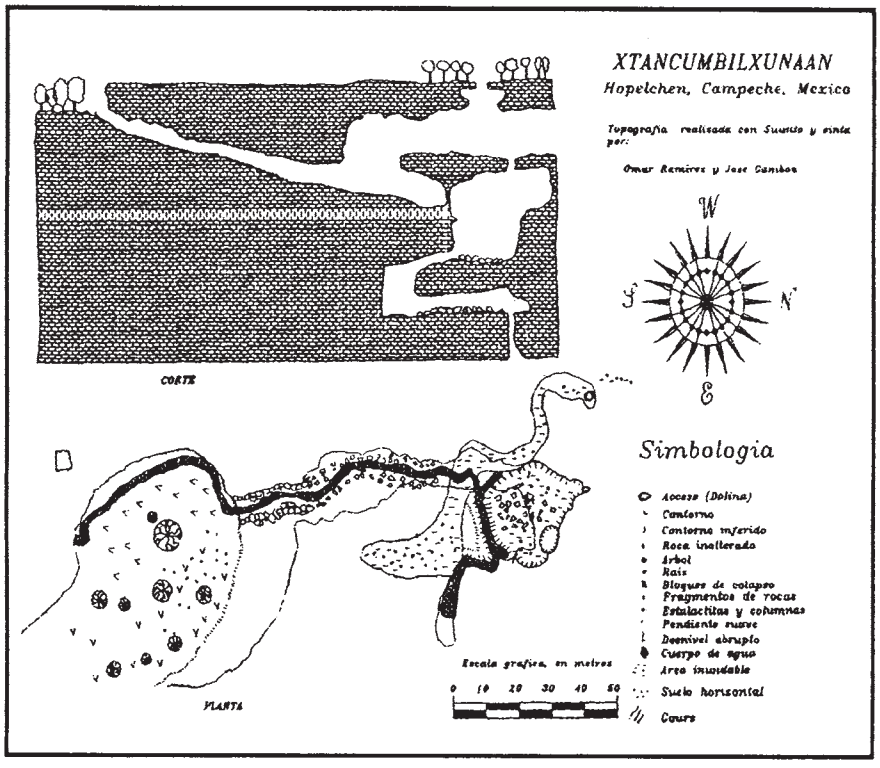
The Italian Río La Venta Project has been exploring the area in Chiapas cut through by the Río La Venta, an eighty-kilometer-long canyon cut up to four hundred meters deep into the tropical forest, since 1994. In addition to caving, the project has done much archaeological work.

During the 1997 expedition, archaeologists from the Centro Italiano Studie Ricerche Archeologiche Precomombiane investigated sites that had been found by the cavers, including several centers of the Zoques that were built from the sixth through tenth centuries A.D. Many archaeological finds were also made in the caves, including burials, and most of the caves explored, especially those in the high cliffs, show signs of occupation.

The main cave explored is the 11-kilometer-long **Cueva del Río La Venta**. Another significant cave is **El Naranjo**, 2.5 or 3.5 kilometers long, depending on which source I accept.

The most difficult goal has been the **Ombligo del Mundo**, the Umbilicus of the World, an enormous black hole in the jungle. Because of the difficult country, with jungle vegetation over heavily karsted rock, the hole was only reached at the end of the 1997 expedition by a 100-meter rappel from a helicopter, but the conditions at the bottom of the hole were so difficult that the large cave at the bottom was not entered.

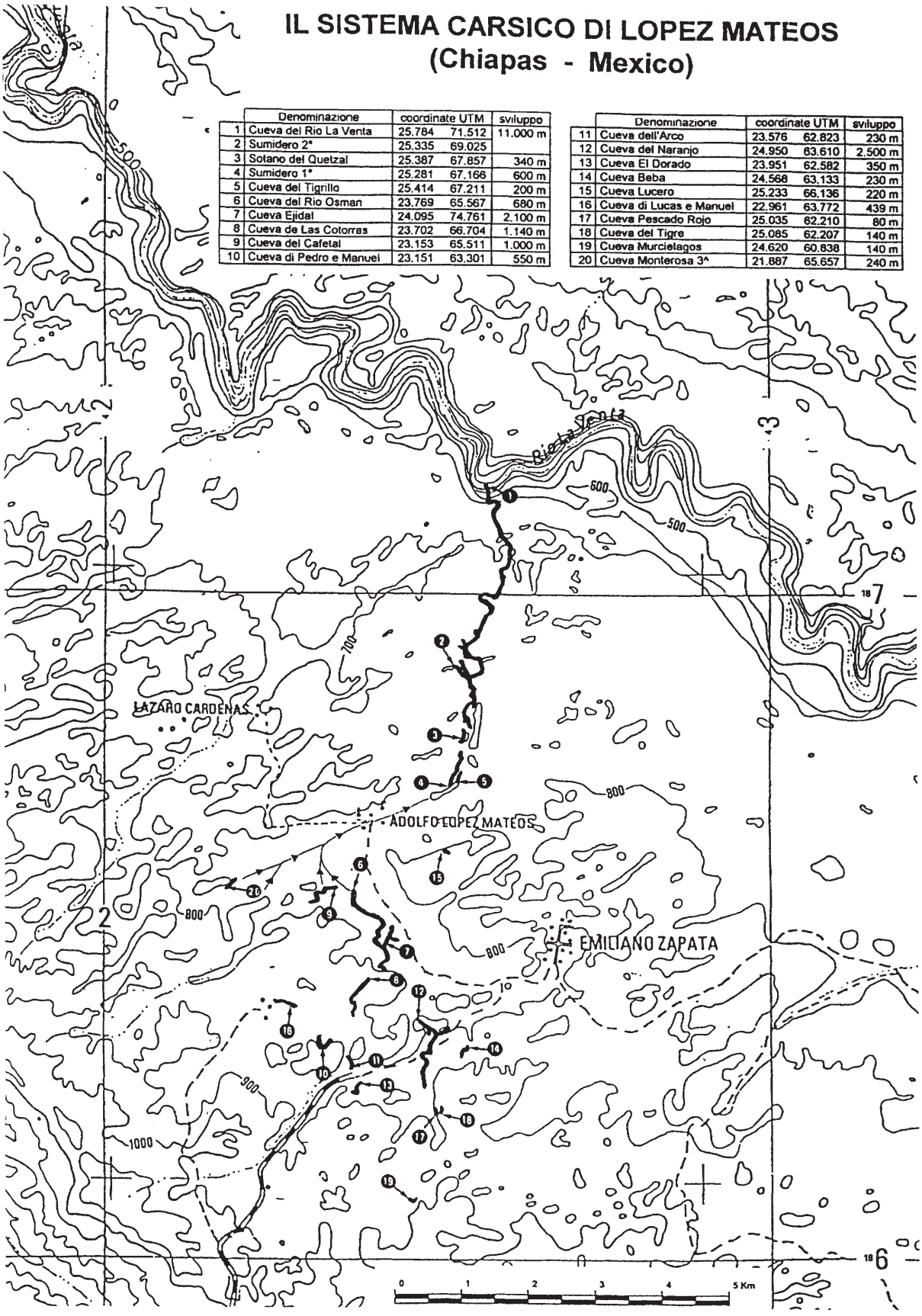
Cavers from the project have also participated in other caving in Chiapas, including the exploration and mapping of **Sima Dos Puentes** in the Cerro Blanco area, with its internal 250-meter pit. *Sources: Speleologia* 35, 1996 (from which the Cueva del Río La Venta foldout map on page 17 is taken); *Proceedings of the 12th International Congress of Speleology*, volume 6 pages 7–10 (from which the area map is taken), Matteo Rivadossi,



IL SISTEMA CARSICO DI LOPEZ MATEOS
(Chiapas - Mexico)

	Denominazione	coordinate UTM		sviluppo
1	Cueva del Rio La Venta	25.784	71.512	11.000 m
2	Sumidero 2°	25.335	69.025	
3	Sotano del Quetzal	25.387	67.857	340 m
4	Sumidero 1°	25.281	67.166	600 m
5	Cueva del Tigrillo	25.414	67.211	200 m
6	Cueva del Rio Osman	23.769	65.567	680 m
7	Cueva Ejidal	24.095	74.761	2.100 m
8	Cueva de Las Cotorras	23.702	66.704	1.140 m
9	Cueva del Cafetal	23.153	65.511	1.000 m
10	Cueva di Pedro e Manuel	23.151	63.301	550 m

	Denominazione	coordinate UTM		sviluppo
11	Cueva dell'Arco	23.576	62.823	230 m
12	Cueva del Naranjo	24.950	63.610	2.500 m
13	Cueva El Dorado	23.951	62.582	350 m
14	Cueva Beba	24.568	63.133	230 m
15	Cueva Lucero	25.233	66.136	220 m
16	Cueva di Lucas e Manuel	22.961	63.772	439 m
17	Cueva Pescado Rojo	25.035	62.210	80 m
18	Cueva del Tigre	25.085	62.207	140 m
19	Cueva Murcielagos	24.620	60.838	140 m
20	Cueva Monterosa 3^	21.887	65.657	240 m



Speleologia 37, 1997 (which includes the Sima Dos Puentes map); Tullio Bernabei, *Hades* 1, 1998.

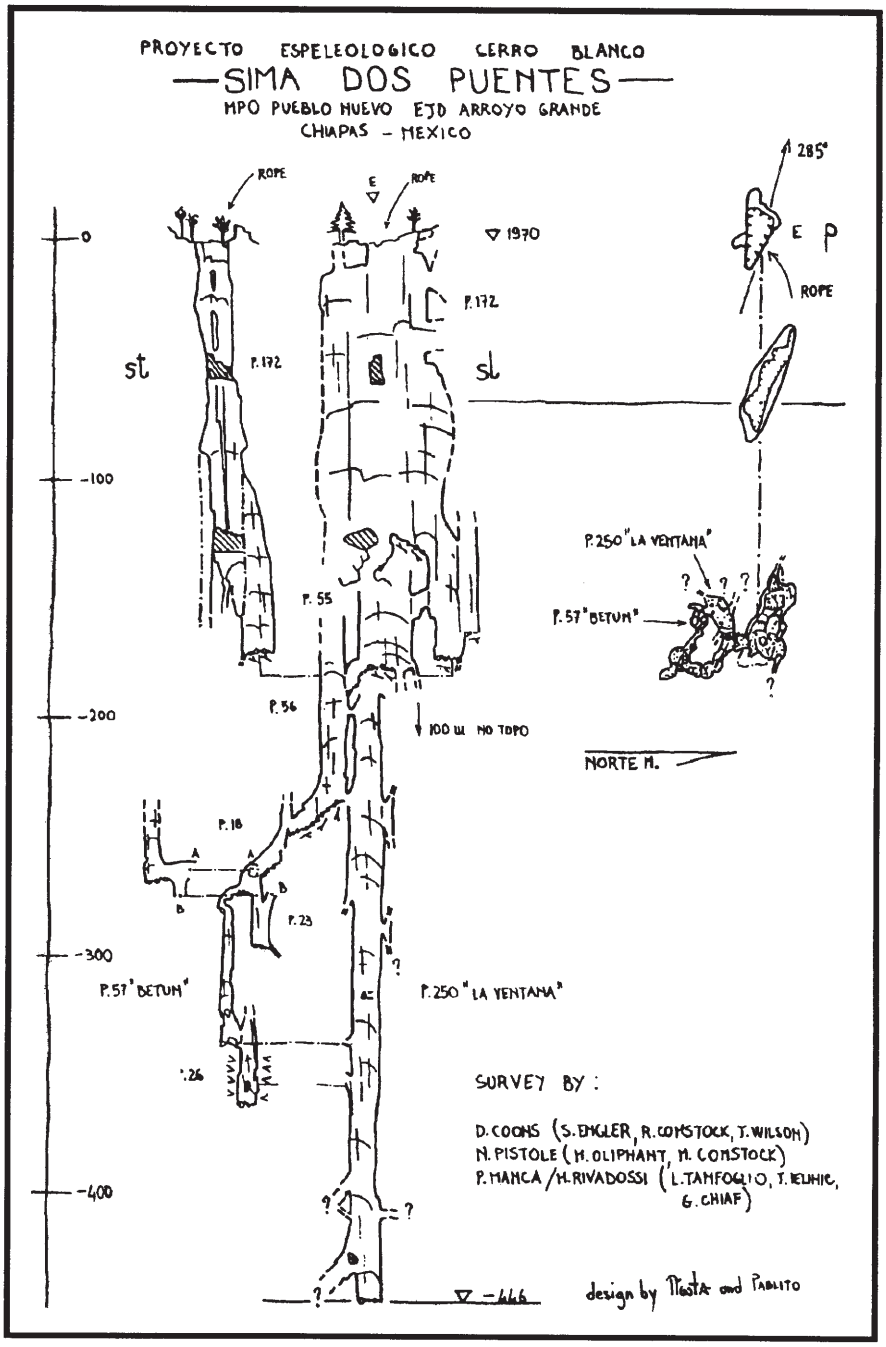
In the hills above Arroyo Grande, a new cave found nearby, **Embudo Sima de Tres Días**, was surveyed down two shafts to a depth of 282 meters.

In 1996, Jim Smith and Ted Wilson had partially explored two caves, **Cueva de la Selva** and **Cueva de Órbitas**, in a remote, high-karst area east of Arroyo Grande. During the first week of the 1997 expedition, Alan Cressler, Ted Wilson, Andy Porter, and Andy Zellner did the multi-kilometer hike back to that area.

They surveyed over a kilometer of maze passage in Cueva de la Selva, where prehistoric Indians had mined gypsum from the walls and sediments. They had dug pits, built small walls, and made petroglyphs and pictographs over a kilometer from the entrance, at a depth of over 90 meters. Nearby Cueva de Órbitas has also been mined, and the group discovered two prehistoric burials in **Cueva de los Entierros.**

The largest virgin cave found in that area was **Cueva Arriba del Agua**. The team explored and surveyed almost a kilometer of passage to a depth of over 120 meters They penetrated a massive breakdown and found a continuation of the main passage, but were stopped by a second breakdown area. They were encouraged by the large passage and extremely strong air flow. The cave was not completely surveyed or explored because of lack of time, and they never saw again the large amount of water that sinks into breakdown below the entrance.

During the week, they explored and surveyed a total of six caves and did an overland survey. Two weeks later, Doug Strait and Ted returned to the area for more recon. They discovered and partially explored two more caves. The area is promising because of the large amount of water that drains off an extensive sandstone mountain, but travel is difficult because of the remote, virgin, uninhabited rain forest and its lack of trails. *Source:* Taco Van Ieperen, Matt Oliphant, Nancy Pistole, and Alan Cressler, *NSS News*, July 1997, *Descent* 140, 1998.



GUERRERO

In June 1998 a party visited a bat cave about an hour west of Iguala, Guerrero, to attempt to descend an upper pit entrance. The main passage is walking and has been mined for guano in the past. The pit, which may turn out to be the deepest in Guerrero, was descended for 40 meters to a guano-covered ledge, but the group did not have enough rope to finish the dangerous drop. That night, so many bats were flying over their camp that rain flies were needed on the tents. The next day, they visited the lower passage and verified that the ledge was indeed still a long way up the pit. One member of the group, who had not been caving before, came down with a

serious case of, probably, histoplasmosis a week later. *Source:* David Jones.

JALISCO

In July 1997, a group of cavers, including several novices, went to a hill called El Tapanco (the Attic) about an hour and a half from Guadalajara. After some vertical practice on the surface, they climbed the hill through ubiquitous *dominguilla* plants, which sting like nettles, looking for **El Sótano del Tapanco** (which would be the Attic's Basement). It is located near the top of the hill just beside a large outcrop that displays some of the finest "prickly rock" you could hope to avoid sitting on.

The pit entrance is a hole about 1 by 2 meters that immediately opens into a long fissure. A second hole a few steps away is only a few inches in diameter. The floor of the pit is 16 meters below the entrance, and a second, lower pit is choked with rocks a few meters down. A tree root that ran down the pit and looked strong enough to climb was given a playful tug, resulting in a shower of small stones and dirt.

About an hour later, when someone was on rope, a large rock, evidently disturbed by the root, came out of the wall, slightly injuring the climber. Fortunately, those at the bottom of the pit were out of the way, but the rope was cut into two 30-meter pieces where the rock hit the floor. A new cave-safety rule: leave the root alone. *Source:* John Pint.

MORELOS

In the Suchiooc lava flows near San Juan Tlacotenco [see *AMCS Activities Newsletter* 20], the major caves have been greatly extended. **Cueva de la Iglesia** is now 5,145 meters long, and **Cueva del Ferrocarríl**, at 5,623 meters, may be the longest lava tube in North America. *Source:* Ramón Espinasa.

NUEVO LEÓN

On July 1, 1998, a group of cavers stopped at **Cueva de El Ebanito** in the canyon along the highway west of Linares. This is a significant wet-weather resurgence that slopes steeply down to a sump. Sometime in the 1970s, Wayne Russell dove the sump to a boulder choke.

This time, due to the record drought, water levels were very low. Kevin Stafford rolled a hundred-kilo cobble out of the way, and we could then drop down another 5 meters to reach the new sump level. We could see the underwater passage continuing down a gentle slope, 2 meters wide and 1.5 meters high, very divable. It is a somewhat tight squeeze through the cobble choke, so it would be best to dive during a drought. Cirolanid isopods were seen in the sump. *Source:* Peter Sprouse.

Jim Kennedy and other, mostly Austin cavers have been systematically exploring and surveying caves near the village of Laguna de Sanchez, southwest of Monterrey and west of the better-known Portrero Redondo area.

The area was initially visited in December 1996 to assist biologist Arnulfo Moreno with studies of the bats in the area, particularly *Lep-tonycteris nivalis*, a designated endangered species in both the United States and Mexico. These bats feed on the nectar of agaves and gather in **El Infierno de la Camotera** [see *AMCS Activities Newsletter* 15] to give birth and rear their young. Through exploratory hikes and conversations with locals, many undocumented caves were found.

The first area competed, **Mesa del Barro**, lies at the edge of the village and contains six caves and four for-the-record-only holes. Only one cave is unmapped, and 469 meters of surface survey ties everything but the unmapped cave together.

Mesa Colorada, a boreal karst at about 2500 meters, so far has eleven new mapped caves, four FROs, and another eight or so unmapped caves. More than two kilometers of surface survey helps pinpoint the locations. A return trip in March 1999 will continue the work in this area.

La Camotera, a karst plateau between Laguna de Sanchez and Portrero Redondo, has the previously-mapped El Infierno and one other cave. Recent trips discover at least five others, and numerous sinks and small entrance await the March trip.

Several other caves in the general area have been discovered, and a few have been surveyed. The most interesting lead is the sumidero at the bottom of the polje. This 10-meter pit was gated several years ago by a public-works program to alleviate periodic flooding of the polje, but lack of an access door has so far frustrated attempts at exploration.

Other caves remaining to be explored and surveyed include one reportedly mined for guano and another mined for "crystals." So far, over thirty new caves and karst features have been surveyed in the Laguna de Sanchez area, and approximately twenty more are known, but so far unsurveyed. *Source:* Jim Kennedy.

The Texas Speleological Association conducted projects at **Gruta del Palmito** in Bustamante during the Labor Day weekends of 1997 and 1998. Palmito is a so-far rudimentary commercial cave, with huge formations that have seen a lot of vandalism, fortunately mostly graffiti rather than breakage. The first project dealt with trash removal and the construction of concrete steps down the slippery entrance slope of the first room, the only one currently lit.

The 1998 project focused on graffiti removal. Many cavers from Texas and Mexico participated in these efforts. There are rumors, once again, that money may be available for the completion of the road to the entrance and a proper trail, which would circle the entrance room and also go through the Paso de la Muerte to an overlook for the massive breakdown slope of the main passage. *Source:* Bill Mixon.

See also information on bat conservation at Cueva de la Boca at the end of "Mexico News."

OAXACA

The joint Swiss and American

expeditions to the Cerro Rabón continued in 1997 and 1998. Among the finds in 1997 was **Nita Gatziquin**, with its 200-meter drop, and extensive vertical passage below the Electrolux Borehole in the **So On Jan-Kijahe Xontjoa** system [see map in the "Mexico News" section of *AMCS Activities Newsletter* 22]. The new pits reached a depth of 870 meters. The 1998 expedition of ten cavers was greatly impeded by lack of water and forest fires in the region. *Source:* Catherine Perret, *Cavernes* 1997 number 2; Roman Hapka, *Cavernes*, 1998 number 1.

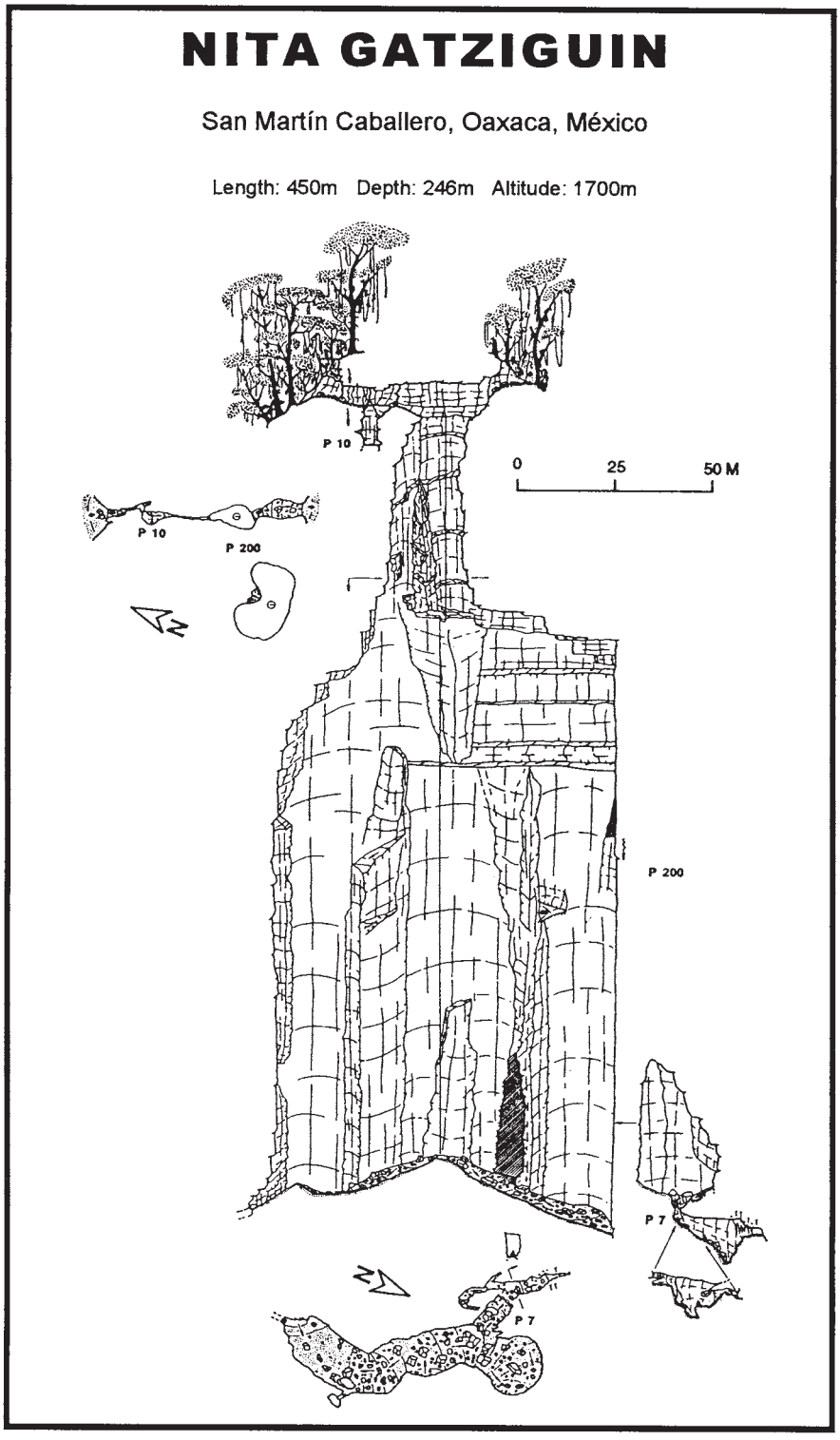
In January 1997, Bill Stone, Barbara am Ende, Brian Rennex, Bart Hogan, Bev Shade, Jason Richards, Jason Mallinson, and Rick Stanton set camp in the **Río Santo Domingo** canyon on the north side of the river, upstream from **Cueva del Mano**. [The Río Tuerto Expedition report in *AMCS Activities Newsletter* 22 contains area maps and tells of earlier diving here.]

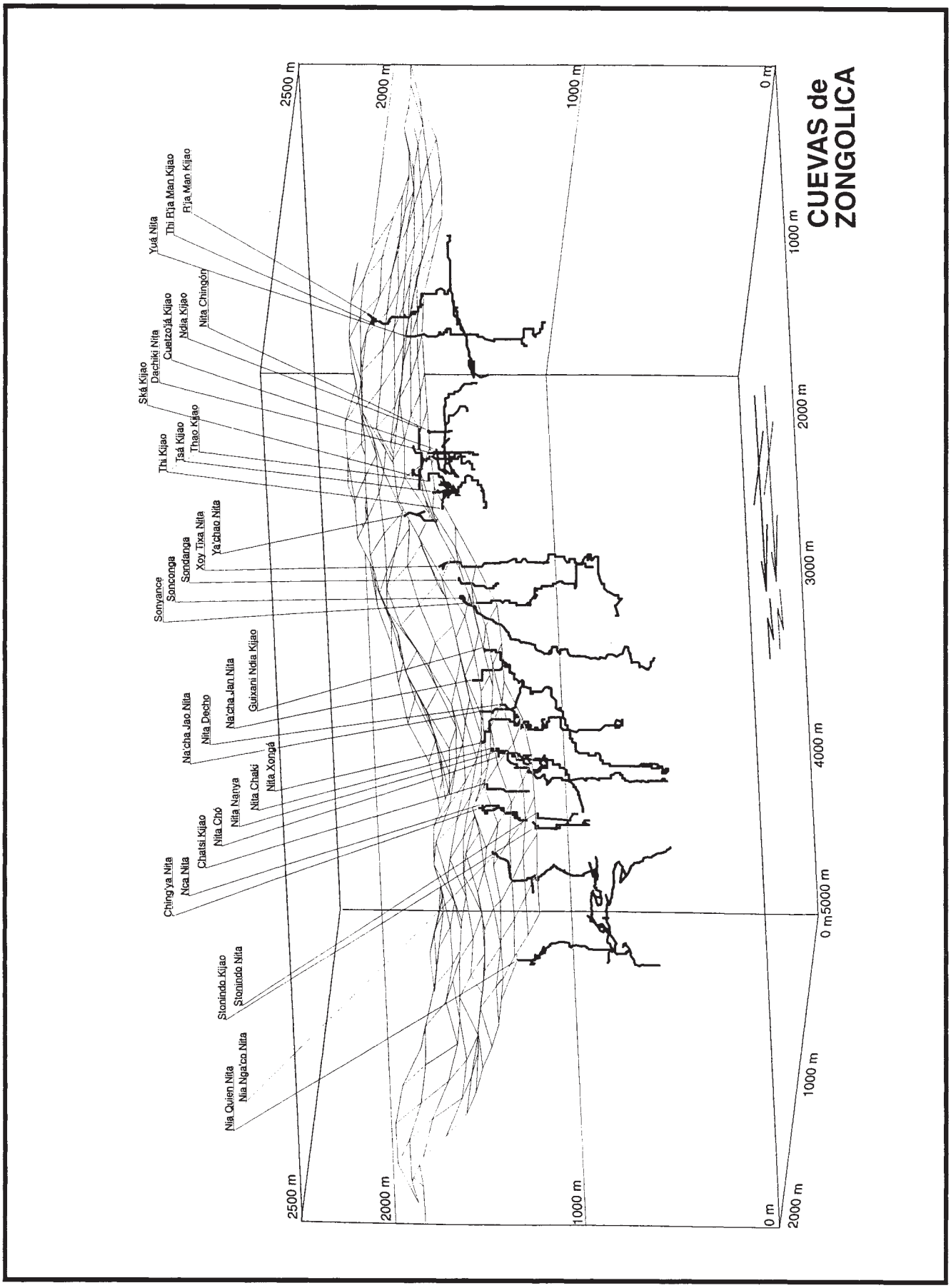
There they pushed the **Agua Fria** spring, with both climbing and diving gear. Three sumps were dived. The first went 300 meters to a depth of 30 meters and likely connects to the Maryland Room. The second, just north of the Nevada Room, about 700 meters into the cave, went 400 meters to a depth of 50 meters. Further progress was halted by zero visibility that resulted from silt percolating off the ceiling.

A vertical underwater shaft at the end of the cave, 1.3 kilometers north of the entrance, was descended in zero visibility to a depth of 33 meters at a ledge in a jagged fissure. The passage goes, but is exceedingly dangerous owing to the visibility problems and the sharp rock. Barb and Bill traced some surface canyons heading north in the area and found dirty stream sinks in contact bands in the otherwise metamorphic-rock canyons. These probably account for the flow and the mud.

Given the little success on the north side of the Río Santo Domingo canyon, they resumed pushing **Cueva del Mano**, the Cheve resurgence on the other side of the canyon and ultimately extended the southernmost sump in the cave 400 more meters south toward Cheve.

Exploration ended at a water depth of 40 meters in a 20-by-10-meter tunnel with very clear visibility. It takes a side-mount stage dive with three tanks to get to that point. There is more work to be done there. The route periodically splits into phreatic mazes, and it's easy to blow an entire dive on a dead end. Kudos to the British divers Stanton and Mallinson for some fine diving there. *Source:* Bill Stone, *NSS News*, July 1997.




CUEVAS de ZONGOLICA
2500 m
2000 m
1000 m
0 m
5000 m
Yuá Nita
Thi Ri'ja Man Kijao
Ri'ja Man Kijao
Ská Kijao
Dachiki Nita
Cuetzoiá Kijao
Ndia Kijao
Nita Chingón
Thi Kijao
Tsá Kijao
Thao Kijao
Sonyance
Sonconga
Sondanga
Xoy Tixa Nita
Ya'chao Nita
Na'cha Jao Nita
Nita Decho
Na'cha Jan Nita
Guixani Ndia Kijao
Ching'ya Nita
Nca Nita
Chatsi Kijao
Nita Chó
Nita Nanya
Nita Chaki
Nita Xongá
Stonindo Kijao
Stonindo Nita
Nia Quien Nita
Nia Nga'co Nita

The accompanying **Zongolica-area** profile map shows the caves explored by Australian expeditions. Articles or news items on those expeditions can be found in past issue of the *AMCS Activities Newsletter*: Number 15 page 11, 16 p 21, 18 p 40, 19 p 62, 21 p 4, and 22 p 85. *Source:* Alan Warild.

During expeditions to the **Cerro Rabón** between 1991 to 1995, archaeological material was found in several vertical caves in places that revealed a mastery of vertical caving by the ancient Mazatecs. In *Tilpan 3*, ceramics such as intact vases were found to a depth of 150 meters, reached after descending an 80-meter shaft. The reasons that encouraged the Mazatecs to such perilous feats are unknown. *Source:* Roman Hapka and Fabienne Rouvinez, *Proceedings of the 12th International Congress of Speleology*, volume 3, page 57, 1997.

PUEBLA

The Belgian group GSAB has been working in an area in Mexico for twenty years. It is located in the state of Puebla, on the border with Veracruz, between the Sierra Zon-golica to the north and the mountains of Huautla to the south.

There are now more than 120 kilometers surveyed in the area, three caves more than one thousand meters deep, and about ten between five hundred and eight hundred meters deep.

The two main resurgence caves that they've been exploring for several years are **Atlixicaya**, which is now 12 kilometers long, and **Coyolatl**, which is now 20 kilometers long. The most recent trips took place in 1995 and 1997. These expeditions focused on the resurgence caves, where progress is difficult due to the flow of the rivers and the risk of floods, so only 12 kilometers of new cave was surveyed.

They plan to return in early 1999 and work both in the resurgence caves and in the area between 2200 and 3200 meters elevation. *Source:* Richard Grebeude.

In the summer of 1998, email

DEEPEST CAVES IN ZONGOLICA AREA OAXACA

(depth, length in meters)

1	Sonconga	1014	2390
2	Guixani Ndia Kijao	955	2292
3	Nia Quien Nita / Nia Nga'co Nita	906	7148
4	Nita Chó	894	2467
5	Xoy Tixa Nita	813	1098
6	Sonyance	740	1782
7	Nita Xongá	739	1578
8	Yuá Nita	705	1260
9	R'ja Man Nita	609	2384
10	Bita Chaki	486	1013
11	Thi Kijao / Thao Kijao / Tsá Kijao	358	1870
12	Nita Ská	348	1208
13	Stonindo	300	1166
14	Dachiki Nita	283	1719
15	Nca Nita	258	368
16	Chatsi Kijao	230	275
17	Sondanga	230	339
18	Cuetzo'já Kijao	222	373
19	Na'cha Jao Nita	220	349
20	Ching'ya Nita	216	310

Five expeditions from 1985 to 1996

DEEPEST CAVES IN BELGIAN AREA PUEBLA AND VERACRUZ

(depth, length in meters)

1	Akemati *	1226	4918
2	Sistema de Ocotempa **	1070	4720
3	Akemabis **	1015	1505
4	Akemasup *	840	1100
5	Sistema H31-H35	753	5745
6	Aztotempa	700	4000
7	Cuaubtempa Sup *	640	900
8	Sistema Atlalaguia *	623	4530
9	Meadro que Cruca	588	2500
10	Yometa	582	721
11	Sistema H3-H4	430	1300
12	Quipa Xitlama	339	450
13	Sótano del Río Coyomeapan	337	3900
14	Sumidero del Río Xocola	323	1500
15	Pomnosatl	310	580
16	Sumidero de Campo Nuevo	309	824
17	Cueva Xantilco	300	1840
18	Sistema Ictlatlela	297	1835
19	Sótano Atlalaquia *	285	470
20	OZ 21	280	2400

Akemati and Akemasup are connected at -840 meters
Exploration continues in numbers 1, 3, 6, 16
* Contains a pitch deeper than 100 meters
** Contains more than one pitch deeper than 100 meters

messages from Mike Boon expressed concern about the conservation of some of the caves in the **Cuetzalan** area.

When Mike and many others pioneered exploration in this area in the late 1970s, Cuetzalan was a rather remote place, but now there are many more buses from Mexico City and many more tourists. A group called Ostoktakamej, Nahuatl for "caves and the people," has claimed the right to enter the caves with tourists and festooned the town with publicity. Boon reports that teenagers are peddling cave formations in town, and that guides are allowing visitors to remove formations from the entrance area of **Sumidero de Atepolihuit**, the master cave of 35-kilometer **Sistema Cuetzalan**.

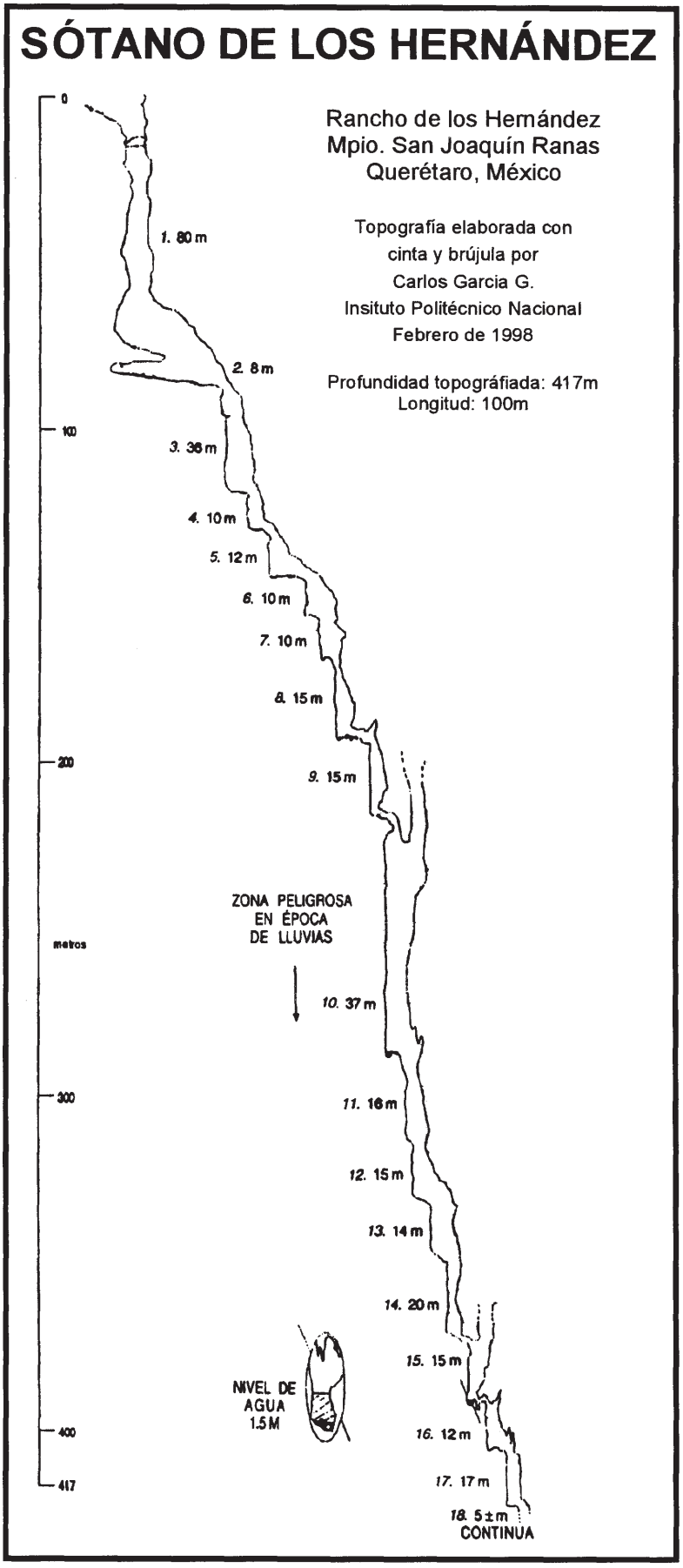
He seeks help in convincing the town and the cave organization to better preserve the caves, with gating, better control of guiding, and so on. He can be reached at Lista de Correos, Cuetzalan, Puebla, Mexico or maseualsiua@laneta.apc.org. *Source:* Mike Boon.

QUERÉTARO

Sótano de los Hernández is located in the municipality of San Joaquín Ranas, Querétaro. It was discovered and explored in 1977 and 1978 by Roy Jameson and Patty Mothes.

In December 1983, Noé Delgado of the Grupo Espeleológico Universitario made a sketch of the cave. When we read about the sótano in Lazcano's *Las Cavernas de la Sierra Gorda*, we gathered a group of cavers from the Asociación de Excursionismo y Montañismo del Instituto Politécnico Nacional to explore the cave. We mapped seventeen drops, stopping because we ran out of time. Below the eleventh drop we found a beautiful turquoise pool and well-rounded walls.

We made a map because we thought that perhaps the sótano had not been bottomed. [A small-scale sketch of the cave appears on page 96 of volume 2 of Lascano's book, and both the book and old *AMCS Activities Newsletters* list the depth as 330 meters.] Perhaps our



map will motivate additional new exploration and discovery.

We were surprised by the low temperature in the cave in February 1998, which reached below freezing. The altitude of the entrance is 2430 meters.

Near San Joaquín and next to the highway lies **La Gruta de los Herrera**. This tourist cave has beautiful and interesting speleothems. About halfway along the path of the tour, we saw a 30-meter pit. One of the guides told us that a local person had descended the pit and found a river, which he had not explored. We did not confirm this. Permission to descend the pit can be requested in the office for the cave. *Source:* Ricardo Arias Fernández.

QUINTANA ROO

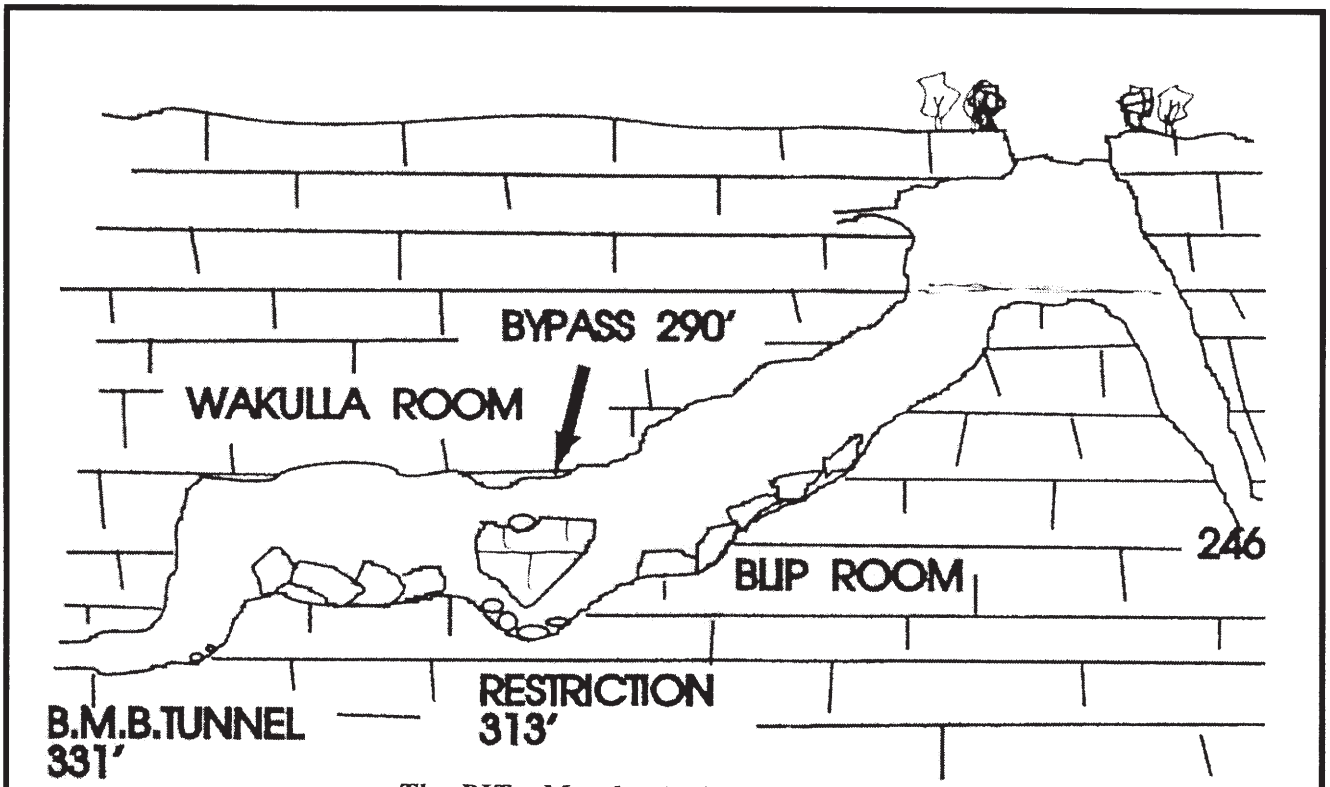
The very long underwater cave systems of Quintana Roo are mostly shallow. While there are deep cenotes in Yucatán and Quintana Roo, they seldom connect to any deep cave passages. The longest underwater caves do, however, have some deep parts. The Blue Abyss in **Nohoch Nah Chich** has been dived to a depth of 70 meters [*AMCS Activities Newsletter* 20, page 86].

In the **Dos Ojos** system, **The Pit** was discovered in 1994 and pushed to a depth of 75 meters. More recent dives have discovered a very large room, the Wakulla Room, and a tunnel at a depth of 101 meters. Dives in April 1997 are described in an article by Jill Heinerth in *Underwater Speleology*, volume 24, number 3 (1997), and dives in October 1997 are described in volume 25, number 4 (1998) of the same magazine in an article by Andreas Matthes and Dan Lins. The accompanying map by Matthes is from that article.

Pottery was sketched and measured during a dive at **Chuu-Ha** cenote, Cozumel, on October 6, 1995. [See also "Mexico News," Quintana Roo, *AMCS Activities Newsletter* 22.] Dr. David Freidel, professor of archaeology at Southern Methodist University, has identified the material as belonging to the Ceh Pech type from the Terminal Classic Maya period, around A.D. 800-1100, during which Cobá, the massive ruined city inland from Tulum, reached the peak of its power and then declined. The three types of pottery seen are illustrated and described in an article by R. D. Milhollin in *The Maverick Bull*, December 1996, reprinted *Speleo Digest 1996*, page 393.

The Yalahau Archaeological Cave Survey is associated with the Yalahau Regional Human Ecology Project of the University of California, Riverside, an international, interdisciplinary research effort focusing on the ancient Maya and their environment in northern Quintana Roo.

They have been investigating the regions's caves since 1995. They have so far located twenty caves of



The PIT - Map by Andreas W. Matthes

archaeological interest in the region. Evidence of ancient Maya activity includes pottery, architecture and other modification of the cave interior, rock art, and the breaking and removal of speleothems. Ancient stairways that lead to pools of water within the cave are commonly found. Of particular interest is the large terraced structure in **Actun Toh**. Such large structures are uncommon in caves of the Maya area. *Source:* Dominique Rissolo, *NSS News*, June 1998.

The original explorations of **Cenote Tortuga**, in 1992, required a twenty-five-minute hike, which, considering the weight of dive gear, required porters and made a single dive take up a whole day. This did not make it an inviting prospect for visiting divers who wanted to make the most of their time and investment.

This cenote is on the same property as **Cenote Vaca Ha**, owned by Mayan rancher Don Camillo of Tulum. After years of gentle prodding by visiting cave divers, Don Camillo invested the time and expense to construct a road through the rough jungle. This road has now been completed all the way to Cenote Tortuga, a distance of nearly a kilometer.

Cenote Tortuga is a small body of clear water surrounded by beautiful trees. Containing a plentiful population of tropical tetras, along with catfish, the cave entrance leads, in 5 meters of water, through a small, narrow passage full of thick silt into the beginning of a huge room at a depth of 12 meters.

The main dive line goes 455 meters, before reaching a large collapse that blocks the passage. This passage is highly decorated with speleothems, and there are many offshoot lines into side passages. The best part of this cave system is a deeper level that goes down into the saltwater zone.

This maze of tunnels off to the east of the main fresh-water passage has crystal-clear water and white limestone walls, and many sections are decorated with stalactites and stalagmites. Depths are around 25 to 30 meters in this area.

Today, over 3000 meters of passage have been surveyed in Cenote Tortuga, and a map is available. It is possible to drive within a few feet of the entrance. Don Camillo charges a reasonable $5 to dive on his property. *Source:* Steve Gerrard.

Project Nohoch is an annual effort to explore and extend **Nohoch Nah Chich** and other underwater caves in the area. [See an article about a similar project in Sistema Dos Ojos in *AMCS Activities Newsletter* 22.] The 1995 Nohoch project concentrated first on connecting the southeastern part of the cave to **Cenote Manatee**, which itself is connected by a 100 meter passage under the beach to a boil in the waters of Tankah Bay.

Eventually, the cenote was connected by an 1800 meter dive to the Main Vein passage in Nohoch Nah Chich, in an effort that was reported in a PBS documentary video. Later, the project explored a kilometer of new passages in the Dark Side of the Moon area beyond the Tanks On-Tanks Off restriction. The work of the 1995 project was cut short by Hurricane Roxanne.

The 1997 Nohoch Project added nearly 5500 meters to the length of Nohoch Nah Chich, making it some 68,370 meters long. They also put nearly 16 kilometers of new line in other caves in the area, despite a relatively small team of eleven divers. *Sources:* Mike Madden, *Explorers Journal*, fall 1998; Karl Shreeves, *DeepTech* 12, second quarter 1998.

Sistema Sac Actun has grown by 3069 meters of new passage in a year. This includes about 2300 meters in the main cave, plus 770 meters in the Cenote Calimba section, connected in 1996 [see *AMCS Activities Newsletter* 22, page 173]. The new length of the underwater cave is over 8500 meters. *Source:* Bil Phillips, *Underwater Speleo-logy*, volume 25, number 1, 1998.

SAN LUIS POTOSÍ

In May 1997, members of the Asociación de Excursionismo y Montañismo del Instituto Politécnico Nacional visited the Rancho Las Yeguas. Julían Avila, our friend and guide, invited us to explore some of the caves on his property.

In **El Sótano de la Escalera**, we found clay pots that may have belonged to people of the Huastecan culture. Sr. Julían had placed a ladder so that we could descend the 10-meter climb at the entrance. If you are interested in visiting Rancho las Yeguas, be aware that Sr. Julían does not like foreigners. Mention that you came on behalf of the "espeleologos del Poli." *Source:* Ricardo Arias Fernández.

The **Nacimiento de Can-Ja** is a resurgence cave located at the base of the mountains that contain Golondrinas and Guaguas. It was explored and surveyed in 1989 through 1992 by members of Asociación Potosina de Montañismo y Espeleología. *Source:* Raul Puente, *Tsaval* 5, 1998.

The map of **Sótano de Rincón del Gato** also appeared in *Tsaval* number 5, 1998, the bulletin the APME, which also contains a description of the exploration of this Sierra del Alvarez cave written by Gerardo Morrill and Sergio Sanchez-Armass.

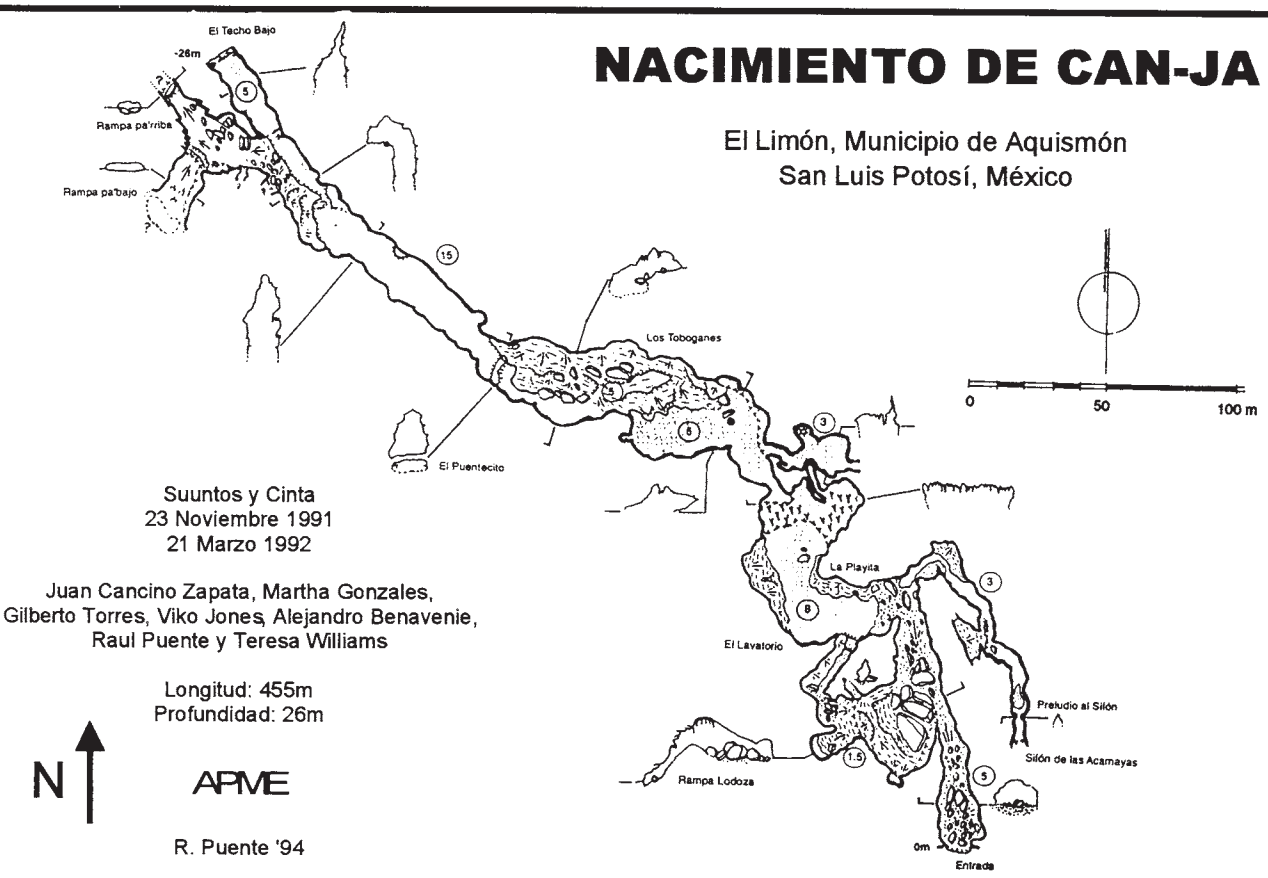
On March 7, 1998, what was thought to be the terminal sump in **Resumidero El Borbollón** [see *AMCS Activities Newsletter* 18] turned out to be the gate to a new section 268 meters long and 142 meters deep, which makes the cave the sixteenth deepest in Mexico.

Three teams from the Asociación Potosina de Montañismo y Espeleología in San Luis Potosí entered the cave. Gerardo Morrill, David Solis Jr., and Omar and Sergio Sanchez-Armass were at the terminal sump waiting for the second group, Rosa María Balbanera, Salvador González, and Luis López, to arrive in order to start derigging the cave, when Sergio decided to try to pass the sump.

At the point where the roof met the water, the muddy floor was 80 centimeters below the surface. After a short free dive, Sergio was in

NACIMIENTO DE CAN-JA

El Limón, Municipio de Aquismón
San Luis Potosí, México



Suuntos y Cinta
23 Noviembre 1991
21 Marzo 1992

Juan Cancino Zapata, Martha Gonzales,
Gilberto Torres, Viko Jones, Alejandro Benavenie,
Raul Puente y Teresa Williams

Longitud: 455m
Profundidad: 26m

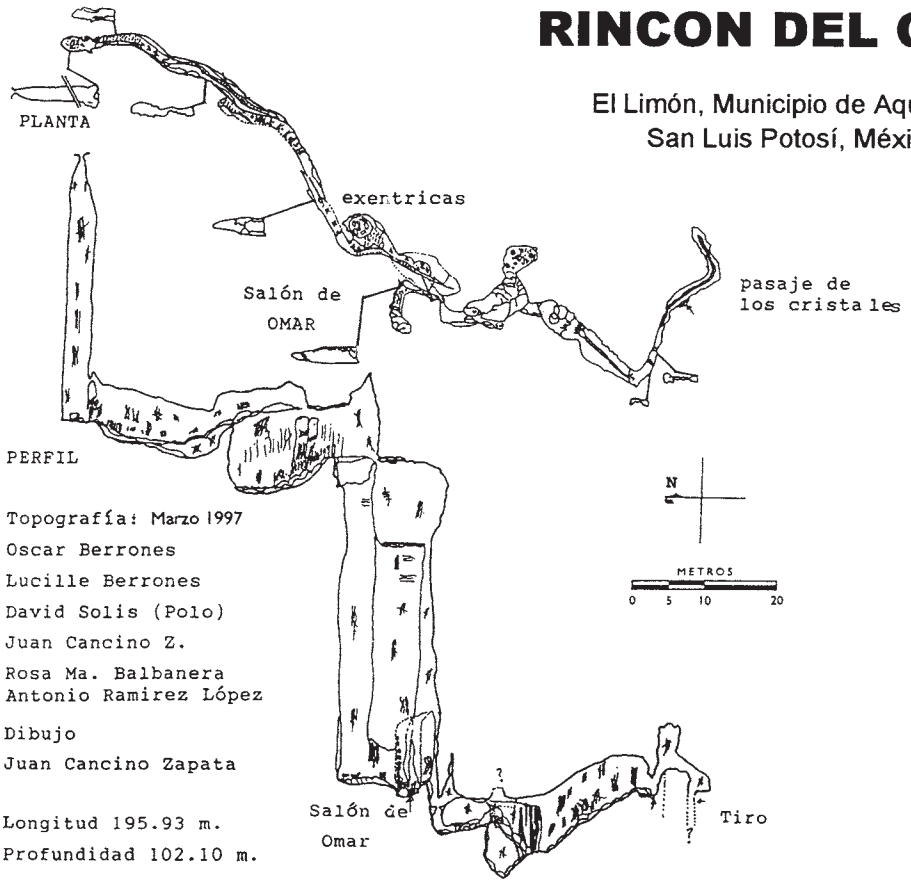
N

APME

R. Puente '94

RINCON DEL GATO

El Limón, Municipio de Aquismón
San Luis Potosí, México



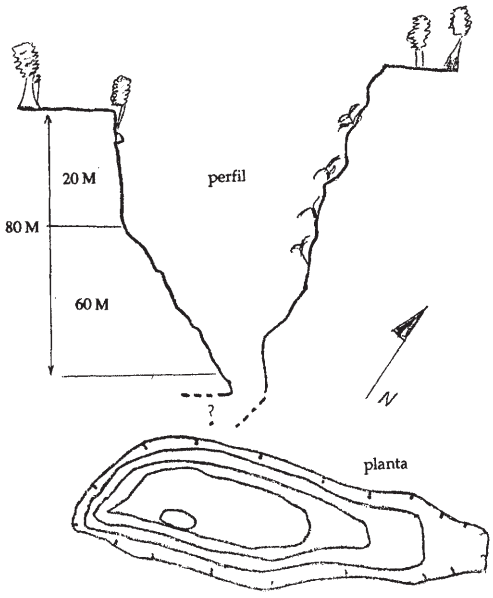
Topografía: Marzo 1997
Oscar Berrones
Lucille Berrones
David Solis (Polo)
Juan Cancino Z.
Rosa Ma. Balbanera
Antonio Ramirez López

Dibujo
Juan Cancino Zapata

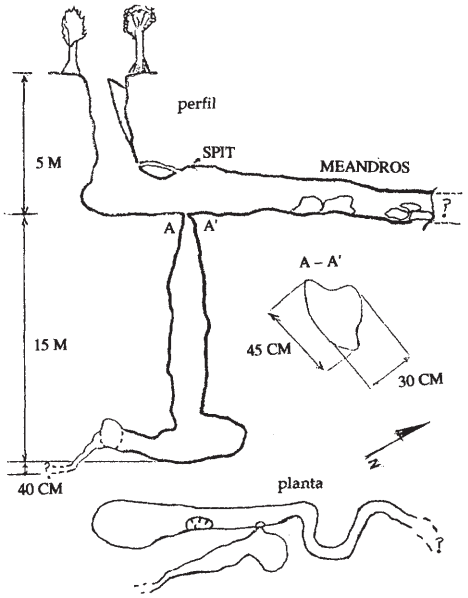
Longitud 195.93 m.
Profundidad 102.10 m.

Caves of Rancho las Yeguas, Ejido Laguna del Mante, Valles, SLP
A. E. M. I. P. N., May 1997. Drawn by Juan Hernández G.

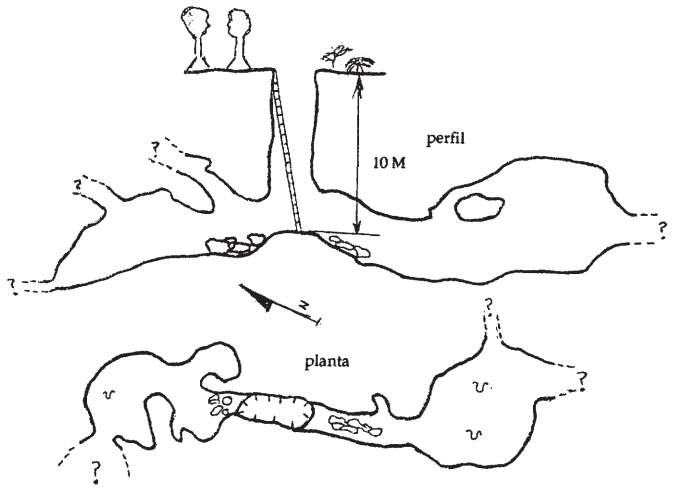
CAVERNA LOS BULTOS



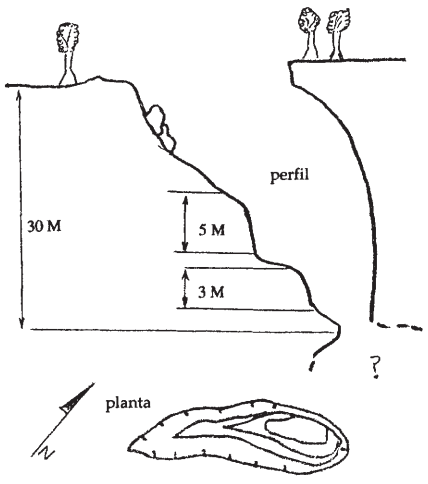
CUEVA ONCE METROS



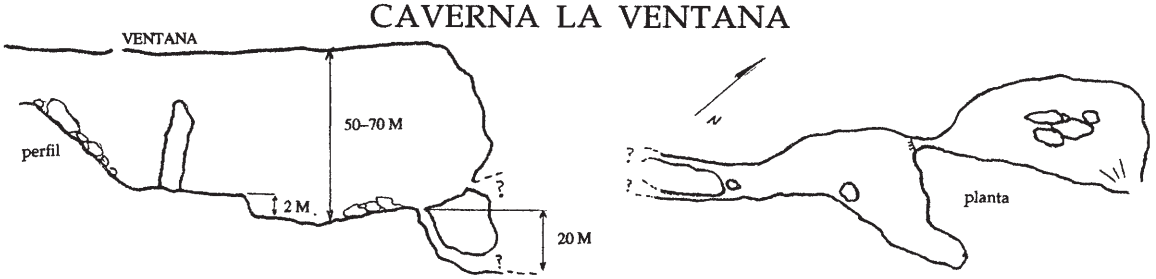
CAVERNA LA ESCALERA



CAVERNA EL FEO



CAVERNA LA VENTANA



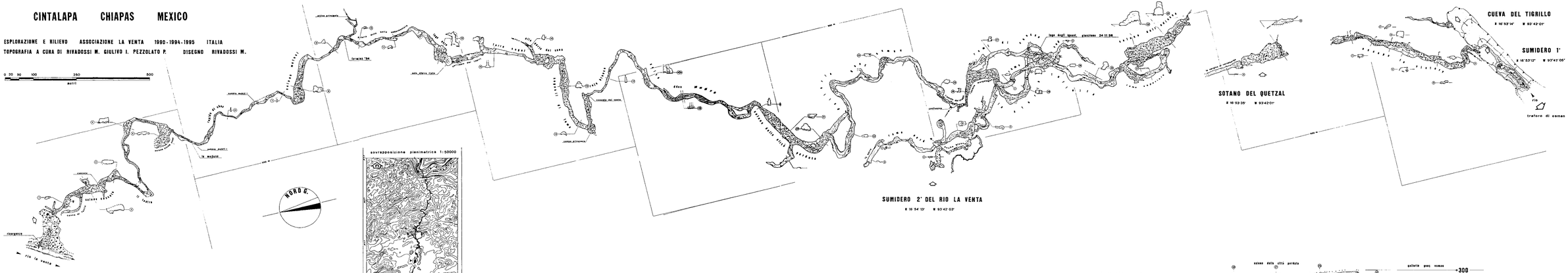
SISTEMA RIO LA VENTA

CINTALAPA CHIAPAS MEXICO

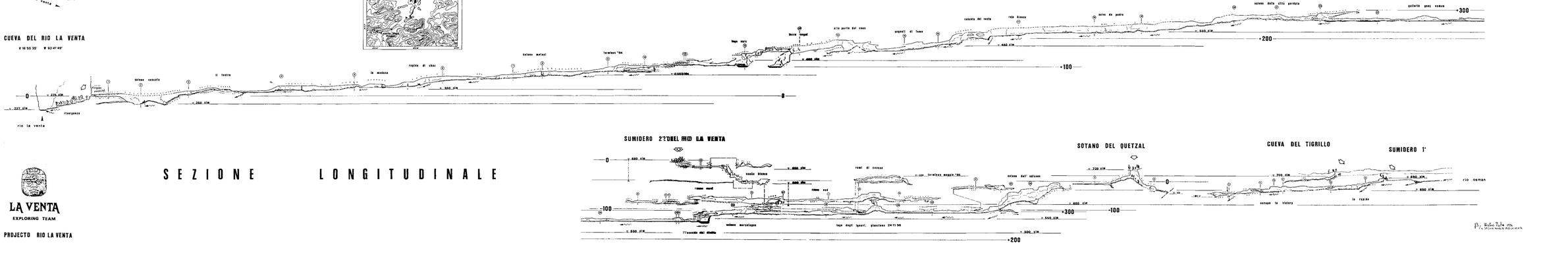
ESPLORAZIONE E RILIEVO ASSOCIAZIONE LA VENTA 1990-1994-1995 ITALIA
TOPOGRAFIA A CURA DI RIVADOSSI M. GIULIVO I. PEZZOLATO P. DISEGNO RIVADOSSI M.

0 20 50 100 250 500
metri

PIANTA



SEZIONE LONGITUDINALE



LA VENTA
EXPLORING TEAM

PROJECTO RIO LA VENTA

a wide chamber with a passage on its left, where the water flowed down small steps. He explored it for 74 meters before he came to a 10-meter drop at the top of a medium-size chamber. When he rejoined his companions, the formally terminal sump was renamed after the great French speleologist Nor-bert Casteret, who enjoyed free diving sumps.

Members of the third group, Miguel Angel Blanco, Daiana and Nathaly Ibarra, Guillermo Martínez, and Cuauhtemoc Sánchez, descended the new pit and found a 40-meter drop, but were unable to go all the way down because their rope was too short.

Two weeks later, Miguel Angel made a solo trip until he ran out of rope after descending five pits in the new section. Twelve hours after he had entered the cave, Salvador and Sergio went in, and after setting up a camp at -650 meters, they met him and shared something to eat.

As Miguel Angel headed for the camp, the other two continued exploring. After a while they found a 15-meter drop where they noticed that high levels of CO_2 were present. They descended another 20 meters to the top of another pit, where they decided to head back because the CO_2 level was likely to be even higher at the bottom.

Three weeks later, Gerardo, Cuauhtemoc, and Sergio entered the cave again, carrying two 500-liter oxygen tanks, kindly provided by David Solis, as well as two brave mice, Alcor and Mizar. Throughout the cave they took air temperature and oxygen concentration readings.

They also surveyed the new Norbert Casteret section of the cave. Because the O_2 level at the top of the pit was only 12 percent, the mice were lowered to the bottom of the drop for ten minutes.

Since they both survived, Cuauh-temoc and Sergio went down the pit, wearing oxygen masks, to measure the oxygen concentration there. It turned out that the level was the same as at the top of the pit, so Gerardo went down without a tank. They were in a chamber covered with leaves and mud that, to their dismay, led to a 10-by-6-meter pond.

Now that they were sure that they could stand the high (about 5 percent) CO_2 and low (12 percent) O_2, a fourth expedition was launched. On May 2, Francisco Ulderico Jones, Salvador González, Jorge Landeros, and Ricardo Peralta reached the edge of the pond, and Salvador, on belay, went to the other side and found 9 meters of muddy passage with trickling water flowing into another sump 3 meters in diameter.

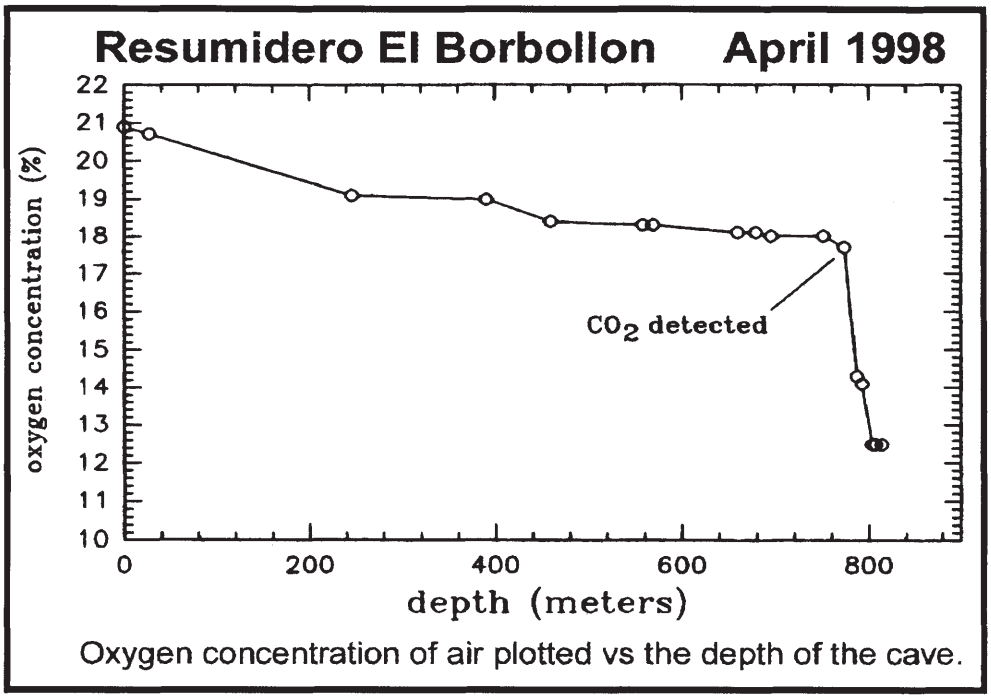
As he was alone and feeling the low oxygen level, he did not try to pass it. Resumidero El Bor-bollón is now 821.4 meters deep and 1650 meters long. As Borbollón is on private land, access is restricted, and the APME is coordinating access for the owner. *Source:* Sergio and Omar Sanchez-Armass.

Members of the Proyecto de Buceo Espeleológica México y America Central have been exploring the **Nacimiento del Río Choy.** In 1996, the resurgence cave was pushed some 350 meters to where the ceiling had pushed the diver down to a depth of 55 meters, with no bottom in sight. [Earlier dives here are described in *AMCS Activities Newsletter* 10, page 28.]

The visit in February 1997 began with replacing the old lines which had been torn to shreds by the floods of the previous summer. Even beginning to dive is physically demanding, as divers must carry all of their equipment up the river, over the falls, and into the entrance room lake before any actual diving is done.

Once in the passage, the diver is unable to see the opposite wall, the floor, or the ceiling of the large passage, and the current that is such a challenge in reaching the dive site is all but imperceptible. The passage in which the maximum depth was reached in 1996 was uncharacteristically small and had no current, so it was thought that the main route had been missed.

Probes from the end of the new line in various directions, however, failed to locate anything but small, restricted passages, and the final tie-off of the line was again located in a passage that is heading vertically to unknown depth. The team



Oxygen concentration of air plotted vs the depth of the cave.

team hopes to be able to push on with diver-propulsion vehicles if the continuation of the main passage can be discovered. *Source:* Jim Bowden and Ann Kristovich, *Underwater Speleology*, volume 24 number 3, 1997. (The cave is called "Nacimiento Mentiras" in that article.)

TAMAULIPAS

Sótano de Venadito is in the El Abra range, near the town of El Salvador, Tamaulipas, just north of the San Luis Potosí border on Highway 85. It was discovered in the late '60s by AMCS cavers and surveyed in the course of several trips.

A 60m entrance pit is followed by six smaller drops to a base level river passage at -160m. A map was published in the *Southwest Texas Grotto Guide to Mexican Caving* in 1971 with the note: "While Venadito continues to defy complete mapping, we expect it will be finished soon..."

The project of completing the Venadito survey was taken up by Don Broussard, who had participated in the initial work. By the mid-'80s, Don had resurveyed the known cave and added a good bit of new passage in the upper sections.

He and Bill Elliott had also found a way past the blind fish pools which marked the end of Venadito on the original map. They reported "some dry walking passage then about 1000 feet of wet walking passage ending at a mud sump."

Don returned in 1991 prepared to field two teams and complete the survey. The two teams never met and left a hanging survey.

The following year Don was repelled by Africanized bees in the entrance pit. He went back the next year with an improvised bee suit and pry bar. Although the leather biker suit, neoprene gloves and beekeeper's mask over his helmet protected him from most of the stings, he hadn't anticipated the need for a SCBA unit. The mass of bees covering his mask nearly suffocated him. The project was abandoned for several years.

Joe Ivy, who had been on the 1991 survey trip, asked Don to have another try at Venadito in 1997. They made extravagant plans for dealing with the bees, however, a hard freeze had removed that obstacle. While they were denied the joy of eradicating the hive, the cave was beckoning.

Don, Joe, Alan Adams, and Rebecca Jones surveyed nearly 1000m to tie into the hanging survey. They also found several promising side leads.

Don returned with two teams for a "final" assault on Venadito during Christmas 1998. Joe, Alan, and Rebecca would go back to the main passage, swim "just 1000 feet" to the sump, and survey out. Don, Dale Barnard, Christie Quintana, and Don Cooper would mop up all the side leads.

Unfortunately, the Africanized bees had returned to the entrance. Because there had been no bees the previous year, no one had prepared for them. After hearing Don's horror stories, no one wanted to tempt fate. To avoid the bees, all trips into the cave had to go in after dark and be out before dawn. At least the weather was pleasant and breezy, but it was a difficult schedule to keep.

Don's team worked on the side leads. They connected the first one into the main stream passage. Another is heading up in an interesting direction. Don suspects it is either an infeeder or a connection with unknown parts of the main cave. Much more work will be needed in this area.

Joe's team pushed the main river passage another 1500m. At the end of the swimming passage they found not a sump, but a tall canyon. All the water drops down a 30m pit. After several survey trips swimming with flotation and searching in vain for a sump, they were not prepared for a pit. Alan traversed past the pit and found himself at the bottom of a large infeeder.

Once again, Sótano Venadito defies complete mapping. Currently, the cave is 197m deep and more than 3.5km long. We have no expectations that it will be finished soon. *Source:* Joe Ivy.

Sixteen cavers, including three from Mexico and one from Canada, participated in the March 1999 PEP expedition to **Cueva del Tecolote**, Tamaulipas. The objective of this trip was to work leads accessible from Camp I, not occupied since 1990. No mapping had been done in the cave since the Camp III trip six years earlier.

One lead of prime interest was the climb at Jellybean Junction. This led to the discovery of a new flowing stream, the Jellybean River. It was pushed southward for 1000m, in the general direction of **Sótano de Trejo**, to a sump.

Most other mapping was concentrated in the spiny breccia zone of the Mickey Mouse Maze.

The Missouri Crawlway lead developed into an extensive new section called South Park, with 800m mapped and quite a few leads remaining.

A bit farther south in the maze, the Gargoyle Gallery extended into the Tazmanian Trunk, which wound through numerous loops to tie into the Chihue Freeway near Ruthy's Ear Duct. This created a large loop, and numerous new leads as well.

Altogether 3918m was added to the survey, making the cave 35,949m long. A good time was had by all during the six day camp, injuries were minor, and lots of cavers got their introduction to the muddy joys of Tecolote.

Discussions were held with the people of Ejido Los San Pedros about providing them with groundwater information that may help them develop better water supplies, a pressing local problem.

A follow-up trip is planned later in the season to continue exploration of a resurgence cave to the south which may carry Tecolote water. *Source:* Peter Sprouse, Proyecto Espeleológico Purificación

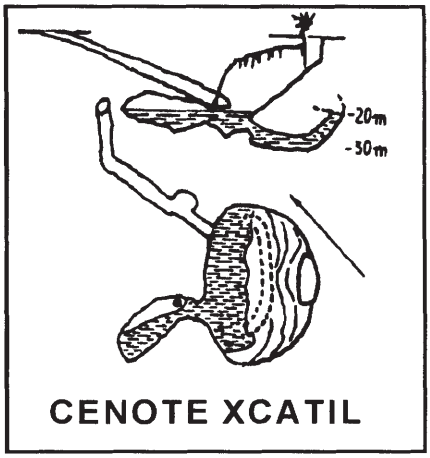
YUCATÁN

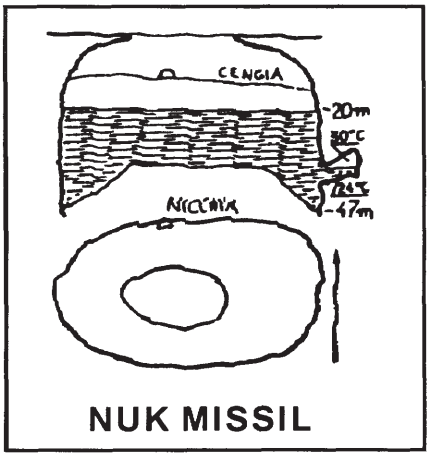
The Asociación de Speleobuceo de Yucatán was formed in 1996 to explore and conserve the many

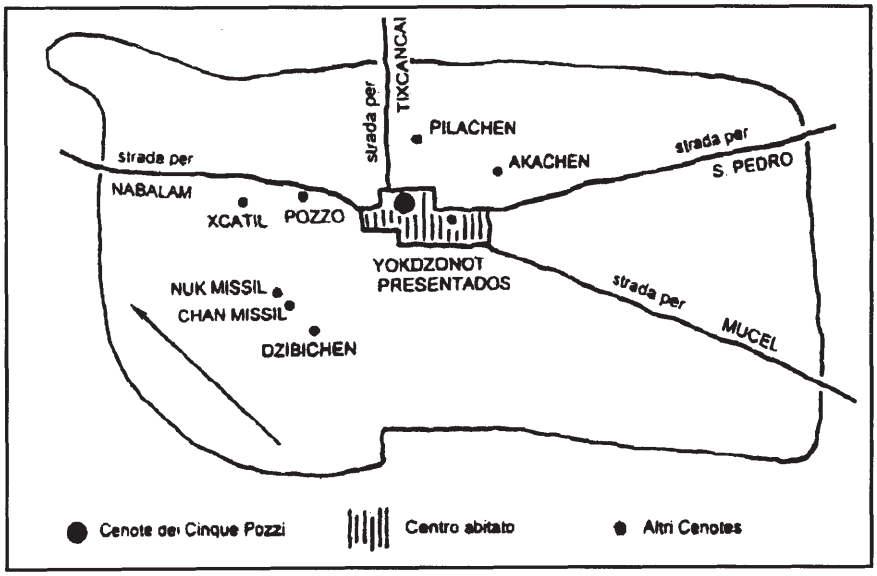
submerged caves and cenotes in the state of Yucatán. Among the caves in Yucatán are **Cenote Chacsinic-che**, in which a water depth of 75 meters has been reached, **Cenote Papakal**, where a large dry entrance room leads to underwater passage with a maximum depth of 35 meters, and **Cenote Santa Barbara**, with a 20-meter rappel to the water and a maximum water depth of about 35 meters. The president of the society is Fernando Rosado (ferros@yuc1.telmex.net.mx). *Source:* Andreas Matthes, *Underwater Speleology*, volume 26, number 1, 1999.

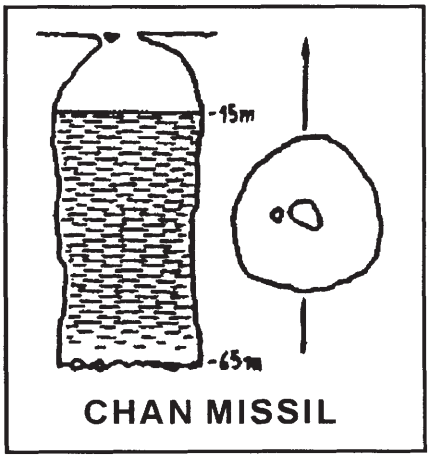
In February 1997, a group of Italian cave divers from the Commissione Grotte Eugenio Boegen visited Yucatán and Quintana Roo. During the trip, they explored numerous cenotes in and around the village of Yokdzonot Presentados, southeast of Tizimin, Yucatán.

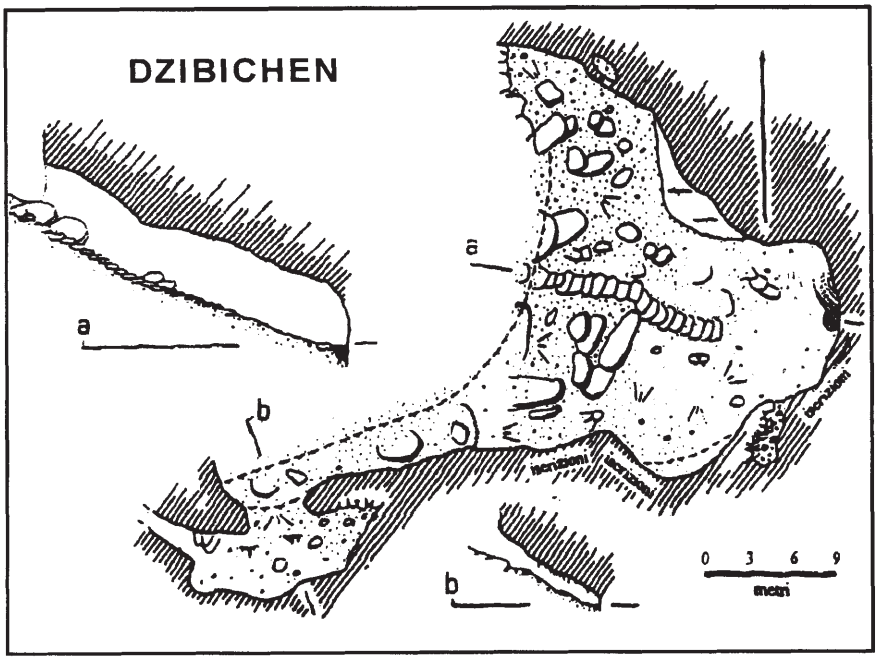
They also visited the important cave-art site **Dzibichen** there. Perhaps the most curious of the cenotes is one they call **Cenote del Cinque Pozzi**, presumably really Cenote de Cinco Pozos, which is in the middle of the village and has

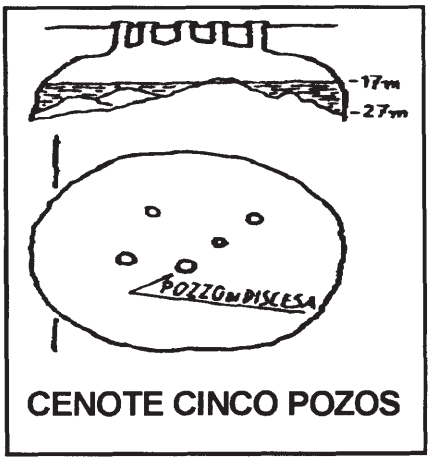












five small openings that drop into a large chamber. *Source:* Toni Klingendrath, *Progressione* 36, 1997.

BAT CONSERVATION

The Programa para la Consevación de Murciélagos Migratorios, or Program for the Conservation of Migratory Bats, was formed in 1991 and has since grown to involve, besides Bat Conservation International of Austin, Texas, a number of universities and government agencies in the United States and Mexico.

A number of grants and gifts, including especially a 1996 grant from a Mexican conservation fund, have sponsored fourteen research pro-jects important to bat conservation, as well as efforts at education in the vicinity of important bat caves.

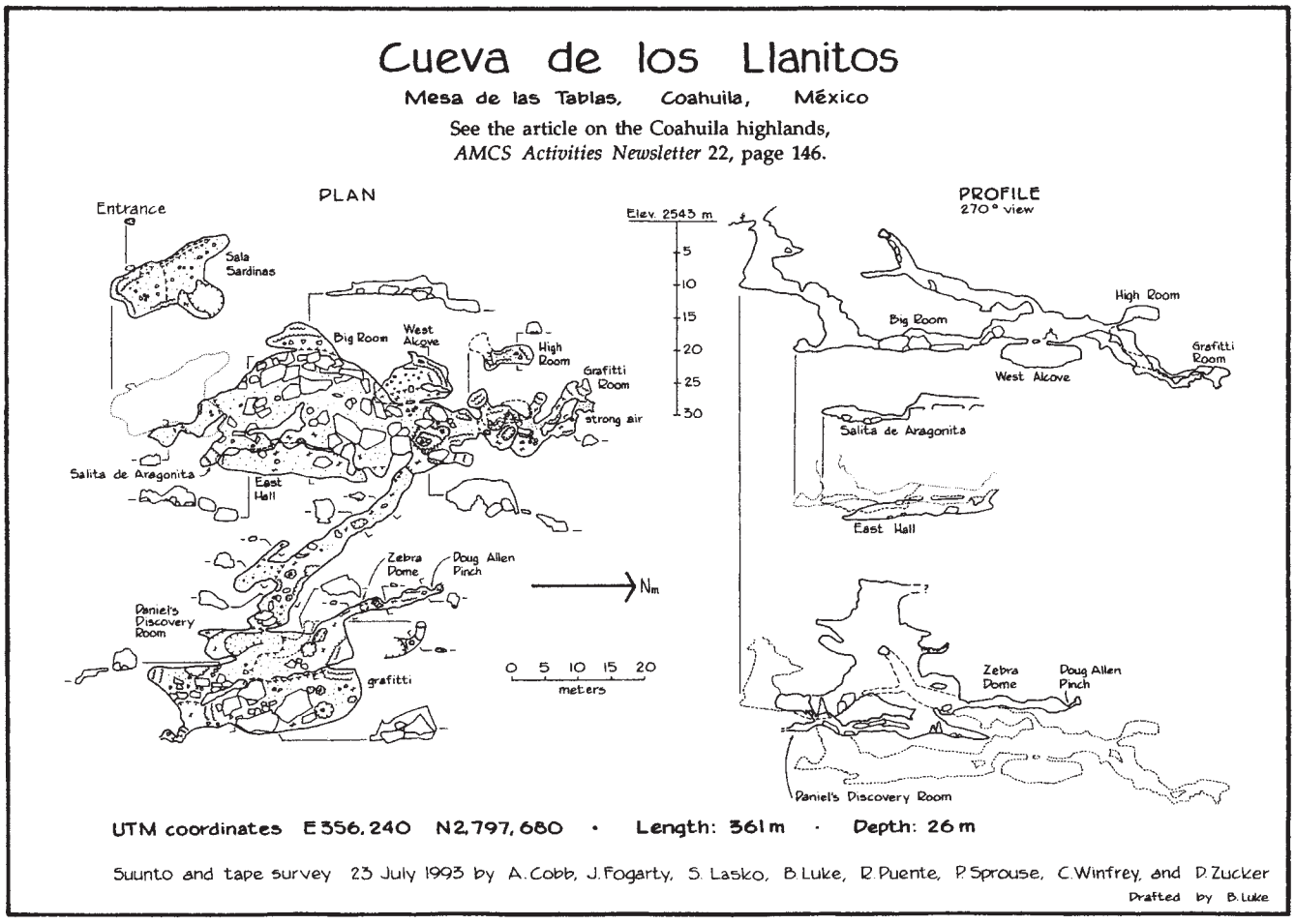
Cueva de la Boca, Nuevo Léon, formerly the home of one of the world's largest bat colonies, has been selected as a priority, and it is expected to be designated a wildlife sanctuary.

Several programs on bats have been presented to local elementary schools in the area of the cave in an effort to foster understanding of and appreciation for bats. An increase in the bat population of Cueva de la Boca from one hundred thousand to five hundred thousand is claimed as a result of conservation efforts so far.

Programs and exhibits have also been presented in schools in El Abra and El Quintero, Tamaulipas. A children's book, *Marcelo el Murciélago*, about a lovable young free-tailed bat has been published.

Arnulfo Moreno and BCI's Jim Kennedy discovered the largest known colony of endangered greater long-nosed bats while surveying a cave in northern Mexico. The colony may contain over one hundred thousand of these bats. Moreno's doctors-degree research will focus on this colony's impact on the pollination of agave plants.

Arnulfo was the author of *Murciélogos de Nuevo León*, which is illustrated with photographs by Merlin Tuttle of BCI. This book was published as part of the quadricentennial of the city of Monterrey. It describes the thirty-seven species known in the state. *Sources:* Bat Conservation International Annual Report 1996-1997; *Bats*, Fall 1996 and Spring 1998.



DEEP PITS OF MEXICO

Peter Sprouse
April 1999
Depth in meters

1	El Sótano (de El Barro)	Entrance drop	Querétaro	410
2	Sótano de las Golondrinas	Entrance drop	San Luis Potosí	376
3	Sótano de Tomasa Kiahua	Entrance drop	Veracruz	330
4	Zacatón	Entrance drop	Tamaulipas	329
5	Sótano de Alhuastle	P'tit Quebec	Puebla	329
6	Nita Xonga	Psycho Killer	Oaxaca	310
7	Sotanito de Ahuacatlán	Second drop	Querétaro	288
8	Sótano del Arroyo Grande	Entrance drop	Chiapas	283
9	Sima Don Juan	Entrance drop	Chiapas	278
10	Sima Dos Puentes	La Ventana	Chiapas	250
11	Resumidero del Pozo Blanco	Entrance drop	Jalisco	233
12	Sótano del Aire	Entrance drop	San Luis Potosí	233
13	Sistema Ocotempa	Pozo Verde	Puebla	221
14	Sótano de los Planos	Puits Tannant	Puebla	220
15	Sótano de Eladio Martínez	Entrance drop	Veracruz	220
16	Sótano de Coatimundi	Entrance drop	San Luis Potosí	219
17	Sótano de Sendero	Entrance drop	San Luis Potosí	217
18	Resumidero el Borbollón	Tiro Grande	San Luis Potosí	217
19	Sima de la Pedrada	Entrance drop	Chiapas	217
20	Sima del Chikinibal	Entrance drop	Chiapas	214
21	Cueva del Tizar	Third drop	San Luis Potosí	212
22	Kijahe Xontjoa	Son On Jan	Oaxaca	210
23	Nacimiento del Río Mante	Macho Pit	Tamaulipas	206
24	Hoya de las Guaguas	Entrance drop	San Luis Potosí	202
25	Sistema de la Lucha	Entrance drop	Chiapas	200
26	Sistema H3-H4		Puebla	200
27	Kijahe Xontjoa	Lajao Se	Oaxaca	200
28	Sima La Funda	Entrance drop	Chiapas	198
29	Sótano de Soyate	Entrance drop	San Luis Potosí	195
30	Sótano de Alpupuluca	Entrance drop	Veracruz	190
31	Cuaubtempa	Pozo con Carne	Puebla	190
32	Sótano de Tepetlaxtli Number 1	Entrance drop	Puebla	190
33	Sótano de Puerto de los Lobos	Entrance drop	San Luis Potosí	189
34	Sótano de Hermanos Peligrosos	Second drop	Veracruz	186
35	Hoya de la Luz	Entrance drop	San Luis Potosí	180
36	Ahuihuitzcapa	Entrance drop	Veracruz	180
37	Sima de Veinte Casas	Entrance drop	Chiapas	180
38	Sistema Soconusco	Darwin Entrance	Chiapas	180
39	Sima del Cedro	Entrance drop	Chiapas	175
40	Sótano de la Cuesta	Entrance drop	San Luis Potosí	174
41	Sima Dos Puentes	Entrance drop	Chiapas	172
42	Sótano de los Monos	Entrance drop	San Luis Potosí	171
43	Sótano de Otates	Third drop	Tamaulipas	171
44	El Socavón	Entrance drop	Querétaro	171
45	Sótano de Tepetlaxtli no. 2	Entrance drop	Puebla	170
46	Sótano de los Ladrones	Entrance drop	Oaxaca	170
47	Nita Diplodicus	Entrance drop	Oaxaca	170
48	Sótano de Agua de Carrizo	Flip Pit	Oaxaca	164
49	OC8	Entrance drop	Puebla	160
50	OC4	Entrance drop	Puebla	160

Peter Sprouse
April 1999
Length in meters

LONG CAVES OF MEXICO

1	Sistema Purificación	Tamaulipas	90470
2	Nohoch Nah Chich	Quintana Roo	68348
3	Cenote Dos Ojos	Quintana Roo	59436
4	Sistema Huautla	Oaxaca	55953
5	Ox Bel Ha	Quintana Roo	44500
6	Sistema Cuetzalan	Puebla	34345
7	Cueva del Tecolote	Tamaulipas	32031
8	Kihaje Xontjoa	Oaxaca	25000
9	Sistema Cheve	Oaxaca	24300
10	Sistema Soconusco	Chiapas	21733
11	Coyalatl	Puebla	20000
12	Sistema Naranjal (Najaron-Maya Blue)	Quintana Roo	18472
13	Atlixicaya	Puebla	12200
14	Cueva del Río La Venta	Chiapas	12000
15	Cueva del Alpazat	Puebla	11903
16	Sistema San Andrés	Puebla	10903
17	Sistema Pondazul	Quintana Roo	10318
18	Grutas de Rancho Nuevo (San Cristobal)	Chiapas	10218
19	Cueva del Arroyo Grande	Chiapas	10207
20	Cueva del Mano	Oaxaca	9790
21	El Chorro Grande	Chiapas	9650
22	Sistema Tepetlaxtli	Puebla	9600
23	Cueva Quebrada	Quintana Roo	9000
24	Sistema de Tepepa (Niebla)	Puebla	8511
25	Sótano de Las Calenturas	Tamaulipas	8308
26	Sistema de Angel (Ehecoklh)	Puebla	8000
27	Sistema Abejas	Quintana Roo	7965
28	Sumidero Santa Elena	Puebla	7884
29	Cueva Yohualapa	Puebla	7820
30	Cueva de la Peña Colorada	Oaxaca	7793
31	Cueva de Comalapa	Veracruz	7750
32	Actún Kaua	Yucatán	7446
33	Sótano del Arroyo	San Luis Potosí	7200
34	Sistema Perrito	Oaxaca	7148
35	Cueva de la Puente	San Luis Potosí	6793
36	Xongo Dwi Ñi	Oaxaca	6500
37	Sistema Zoquiapan	Puebla	6489
38	Cueva Vinata	Michoacán	6460
39	Sumidero de Jonotla	Puebla	6381
40	Cenote Zapoté	Quintana Roo	6000
41	Sistema Sac Actun	Quintana Roo	5876
42	Gruta del Río Chontalcoatlán	Guerrero	5827
43	Sistema H31-H32-H35	Puebla	5745
44	Cueva del Ferrocarríl	Morelos	5623
45	Gruta del Río San Jerónimo	Guerrero	5600
46	Los Bordos	Chiapas	5211
47	Cueva de Agua Blanca	Tabasco	5200
48	Cueva de la Iglesia	Morelos	5145
49	Sima Castor - Sima Grande	Puebla	5100
50	Grutas de Juxtlahuaca	Guerrero	5098

Peter Sprouse
April 1999
Depth in meters

DEEP CAVES OF MEXICO

1	Sistema Huautla	Oaxaca	1475
2	Sistema Cheve	Oaxaca	1386
3	Akemati	Puebla	1226
4	Kijahe Xontjoa	Oaxaca	1209
5	Sistema Ocotempa	Puebla	1070
6	Akemabis	Puebla	1015
7	Sonconga	Oaxaca	1014
8	Sistema Purificación	Tamaulipas	957
9	Guixani Ndia Kijao	Oaxaca	956
10	Sistema Perrito	Oaxaca	906
11	Nita Cho	Oaxaca	894
12	Sistema de Tepepa	Puebla	850
13	Sótano de Agua de Carrizo	Oaxaca	843
14	Sótano de El Berro	Veracruz	838
15	Sótano de Trinidad	San Luis Potosí	834
16	Resumidero el Borbollón	San Luis Potosí	826
17	X'oy Tixa	Oaxaca	813
18	Nita Ka	Oaxaca	760
19	Sistema H31-H32-H35	Puebla	753
20	Sonyance	Oaxaca	745
21	Nita Xonga	Oaxaca	740
22	Yuá Nita	Oaxaca	704
23	Aztotempa	Puebla	700
24	Sótano de los Planos	Puebla	694
25	Sótano de Alfredo	Querétaro	673
26	Sistema Cuetzalan	Puebla	658
27	Sótano de Tilaco	Querétaro	649
28	Nita Nashí	Oaxaca	641
29	Cuaubtempa Superior	Puebla	640
30	Sistema Atlalaquía	Veracruz	623
31	Cueva de Diamante	Tamaulipas	621
32	R'ja Man Kijao	Oaxaca	613
33	Nita He	Oaxaca	594
34	Meandro Que Cruce (H54)	Puebla	588
35	Yometa	Puebla	582
36	Sótano de las Coyotas	Guanajuato	581
37	Sótano Arriba Suyo	San Luis Potosí	563
38	Sistema de Angel (Ehecoklh)	Puebla	553
39	Sistema Soconusco	Chiapas	539
40	Sistema Tepetlaxtli	Puebla	535
41	Sótano del Río Iglesia	Oaxaca	531
42	Sótano de Nogal	Querétaro	529
43	Grutas de Rancho Nuevo	Chiapas	520
44	Sótano de Ahuihuitzcapa	Veracruz	515
45	Sótano de las Golondrinas	San Luis Potosí	512
46	Hoya de las Conchas	Querétaro	508
47	Sótano del Buque	Querétaro	506
48	Pozo de Montemayor	Nuevo León	501
49	Nita Chaki	Oaxaca	493
50	Hoya de las Guaguas	San Luis Potosí	478

SIERRA LOS LLANITOS, SAN LUIS POTOSÍ

Tommy Shifflett

During March 1998, cavers from Virginia, Georgia, and New Mexico (Tommy Shifflett, Phil Lucas, Ben and Cori Schwartz, Mike Ficco, and John Ganter) teamed with cavers from Austin, Texas (Melonie Alspaugh, Peter and Colin Strickland) to recon for caves on the Sierra Los Llanitos, a karst ridge located on the Alaquines quadrangle in San Luis Potosí.

In order to get there we followed a dirt road for about two hours heading southeast from Ciudad Del Maiz. Our destination was a location marked El Tepozan on the map. However, the road fizzled out at San Gabriel, which consists of one residence located along the rim of a closed karst valley. We crossed two other karst valleys before reaching San Gabriel.

Upon arrival, we introduced ourselves to a Señor Rodolfo Rucoba and his son, Aurielo, who was visiting from Houston, Texas. This was convenient because Aurielo spoke fluent English. We soon discovered that Rodolfo was the caretaker of a 4,000 hectare ranch.

Both Sr. Rodolfo and Aurielo were very friendly. They showed us a place to set up camp, and guided us around the area the next day in search of caves. At the end of the trip we met the owner who was also quite friendly and showed interest in our caving activities. He extended his permission for us to camp and cave if we return.

Camp was in the middle of the karst valley under a very large live oak tree. The valley floor is broken by pasture fields with scattered large live oak trees and numerous sinkholes. It is a very picturesque setting. However, the ideal nature of the camp location was offset by the lack of available drinking water and the horrendous number of ticks. After each days outing, we had to groom ourselves for ticks.

Many of the caves that were found are located about sixty meters off the valley floor at the foot of the Sierra Los Llanitos. These were usually pits or entrances at the bottom of a small sinkhole at the end of a dry stream bed.

One pit that was found has a large ten by five-meter wide opening and drops free for about forty meters. At the bottom a tight passage continues with a slight sucking breeze. A hammer will be required for pushing further.

Most of the caves that were found are small with a single 10- to 20-meter pit with a small room at the bottom. Two of the caves that were found, Cueva de San Gabriel and Cueva de los Ecos, had multiple drops down to about 90m. Both caves ended in sumps at what appears to be water table level.

The sump in Cueva de los Ecos contained many large isopods at least three to four centimeters in length. In addition to the isopods, the caves contained what appeared to be large wolf spiders from eight to thirteen centimeters in diameter. Two caves that were found had an active colony of vampire bats.

Four trips were made from the karst valley at San Gabriel up onto the karst ridge Sierra Los Llanitos. This required a significant hike and as such, only a limited area was covered. Two sizeable pits were found near the village of Tepozan.

The first pit, Sótano de Tepozan, is a one-and-a-half by two-meter wide opening in rillenkarren located within the village limits and is used as a garbage dump. The pit is approximately 90m deep and is broken up by two ledges with steep scree slopes. The bottom of the pit is a chamber 15 meters in diameter.

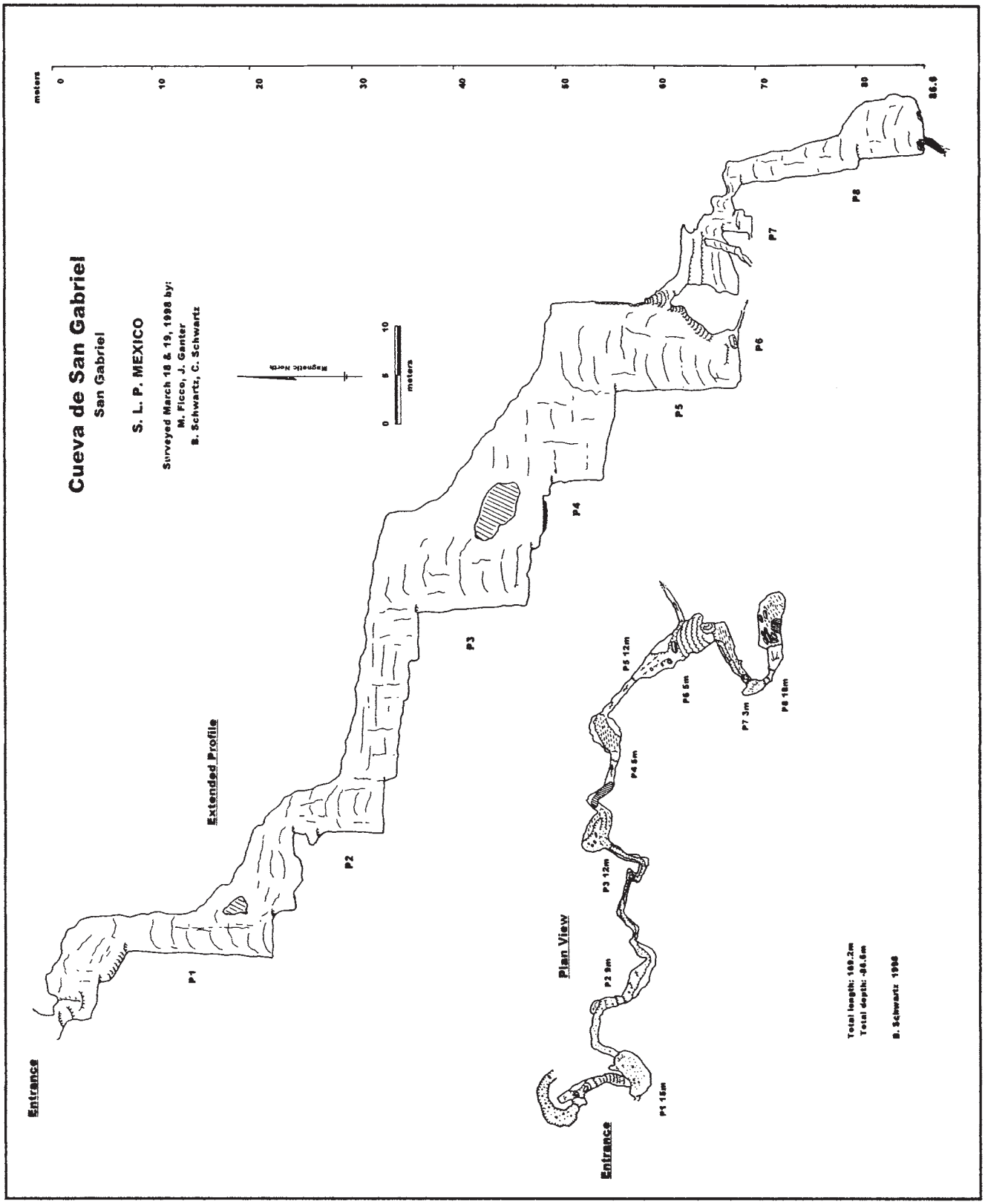
The second pit, Tepozan Pit 16, is a little over 60m in depth and is located about two hundred meters from the village. According to the local inhabitants, these were the only caves in the immediate area.

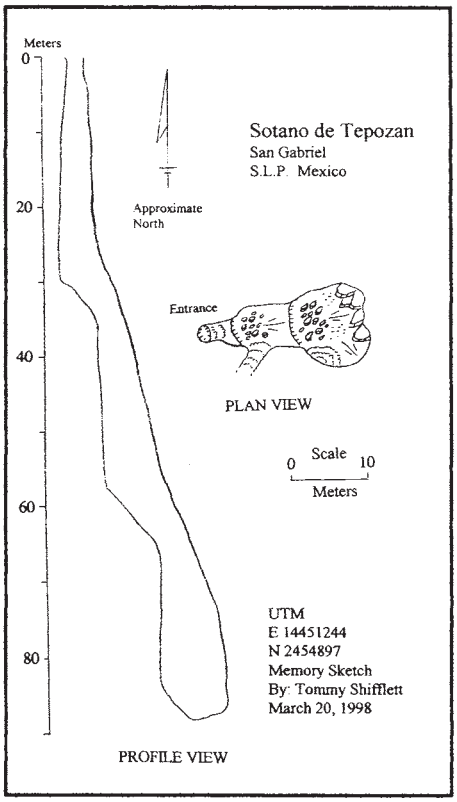
The locals spoke of some other caves that were located about an hour or so hike further away. The day was near the end so we had to hurry off the mountain before the sun set and fog came in. In the fog and dark, the trails can become very confusing.

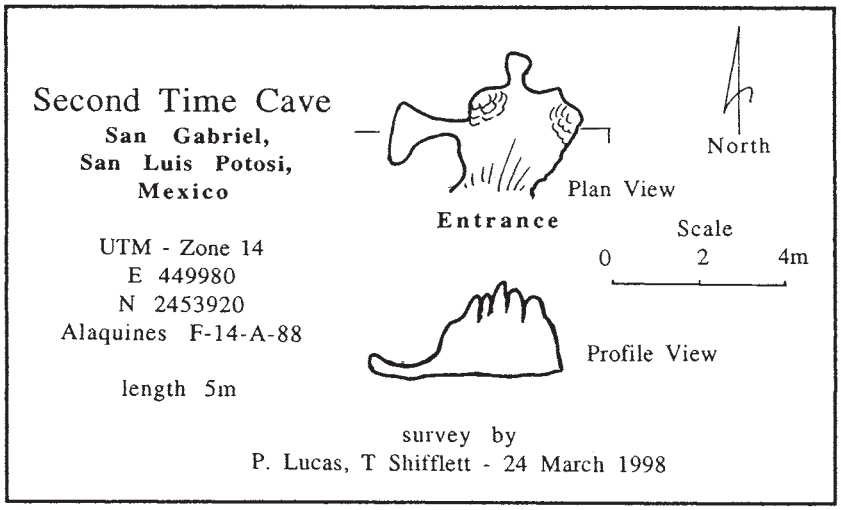
The same villagers who mentioned the other caves were not seen again. It seems that after the day they guided the way to Tepozan Pit 16, they left the village for Ciudad Maiz to attend a festival.

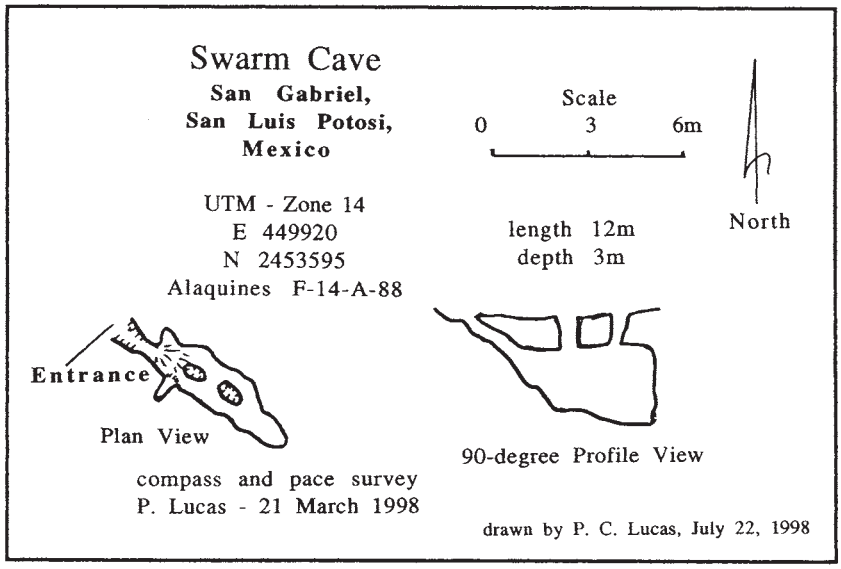
On the last day, a hike was made to check the large sinkhole shown on the topo map located between El Tepozan and Yerbabuena. At the bottom of the sinkhole the terrain is made up of rugged rillenkarren and thick jungle. Hiking around for openings became too difficult a task for a day hike so only the immediate bottom was searched; the perimeter of the sinkhole remains unchecked.

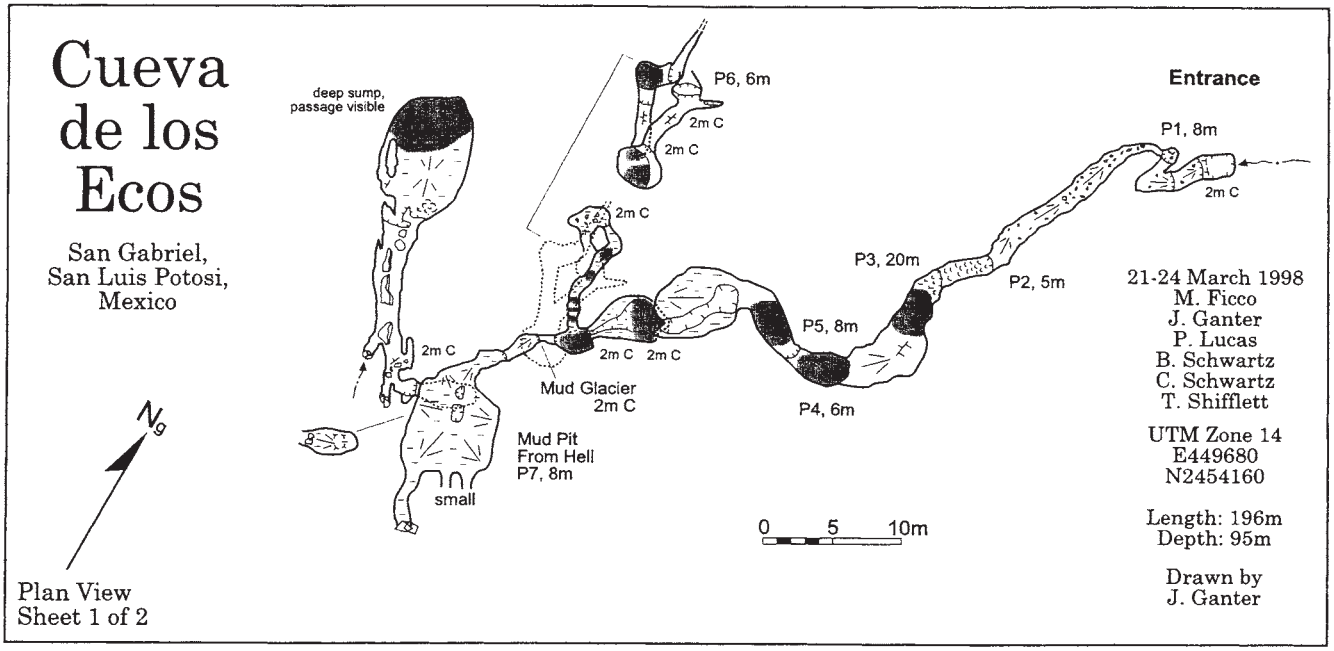
The limestone is thickly bedded both in the valley and on top of the karst ridge. The dip is very steep and measures between forty-five and sixty degrees. The axis of the anticline appeared to be located in the center of the karst valley. Only a fraction of the total karst area was checked, most likely many more caves can be found. Judging by the caves that we found, by the shallow depth to the water table, and by the steep dip of the bedding plane, in all probability, the caves will be small.

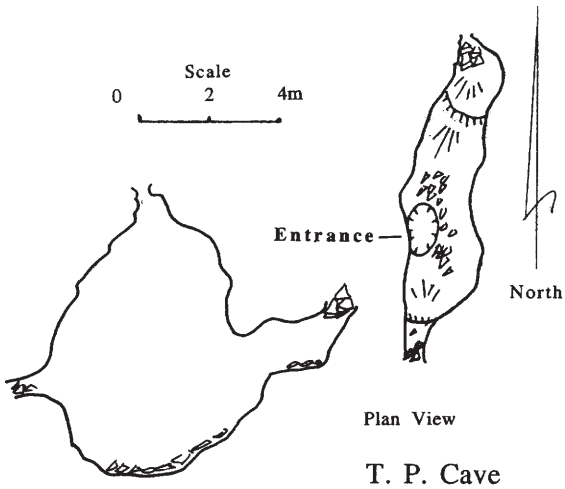

Cueva de San Gabriel
San Gabriel
S. L. P. MEXICO
Surveyed March 18 & 19, 1998 by:
M. Ficco, J. Ganter
B. Schwartz, C. Schwartz
Magnetic North
meters
Extended Profile
Entrance
P1
P2
P3
P4
P5
P6
P7
P8
Plan View
Entrance
P1 15m
P2 9m
P3 12m
P4 6m
P5 12m
P6 5m
P7 3m
P8 18m
Total length: 109.2m
Total depth: -86.6m
B. Schwartz 1998


Meters
0
20
40
60
80
Sotano de Tepozan
San Gabriel
S.L.P. Mexico
Approximate North
Entrance
PLAN VIEW
0 Scale 10
Meters
UTM
E 14451244
N 2454897
Memory Sketch
By: Tommy Shifflett
March 20, 1998
PROFILE VIEW


Second Time Cave
San Gabriel,
San Luis Potosi,
Mexico
UTM - Zone 14
E 449980
N 2453920
Alaquines F-14-A-88
length 5m
Entrance
Plan View
North
Scale
0 2 4m
Profile View
survey by
P. Lucas, T Shifflett - 24 March 1998


Swarm Cave
San Gabriel,
San Luis Potosi,
Mexico
UTM - Zone 14
E 449920
N 2453595
Alaquines F-14-A-88
Scale
0 3 6m
length 12m
depth 3m
North
Entrance
Plan View
90-degree Profile View
compass and pace survey
P. Lucas - 21 March 1998
drawn by P. C. Lucas, July 22, 1998


Cueva de los Ecos
San Gabriel,
San Luis Potosi,
Mexico
deep sump, passage visible
P6, 6m
2m C
2m C
2m C
Entrance
P1, 8m
2m C
P3, 20m
P2, 5m
P5, 8m
2m C
2m C 2m C
Mud Glacier
2m C
P4, 6m
Mud Pit
From Hell
P7, 8m
small
0 5 10m
21-24 March 1998
M. Ficco
J. Ganter
P. Lucas
B. Schwartz
C. Schwartz
T. Shifflett
UTM Zone 14
E449680
N2454160
Length: 196m
Depth: 95m
Drawn by
J. Ganter
Plan View
Sheet 1 of 2



Plan View

270-degree Profile View

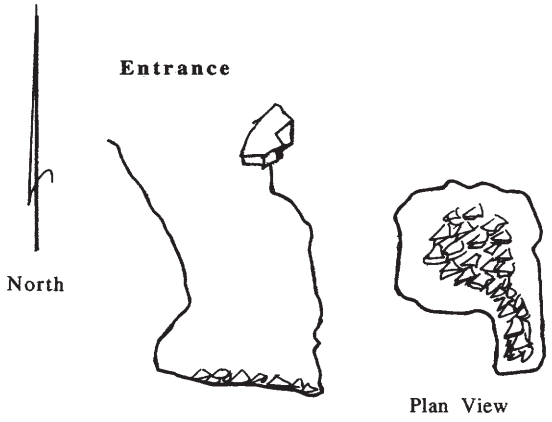
T. P. Cave

San Gabriel,
San Luis Potosi,
Mexico

UTM - Zone 14
E 448250
N 2455650
Alaquines F-14-A-88

length 10m
depth 8m

compass and pace survey
P. Lucas - 18 March 1998
drawn by P. C. Lucas, July 22, 1998



90-degree Profile View

Plan View

OPC3 Cave

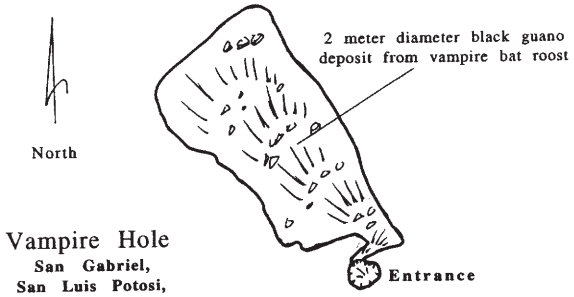
San Gabriel,
San Luis Potosi,
Mexico

UTM - Zone 14
E 448320
N 2455120
Alaquines F-14-A-88

Scale
0 2 4m

depth 6m

survey by
P. Lucas., T. Shifflett
18 March 1998
drawn by P. C. Lucas, July 22, 1998



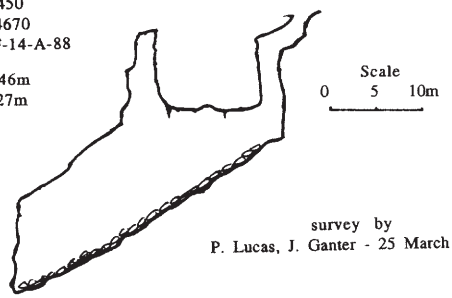
Vampire Hole

San Gabriel,
San Luis Potosi,
Mexico

UTM - Zone 14
E 449450
N 2454670
Alaquines F-14-A-88

length 46m
depth 27m

15 meter handline needed



survey by
P. Lucas, J. Ganter - 25 March 1998

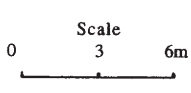
drawn by P. C. Lucas, July 22, 1998

Bloody Fissure Cave

San Gabriel,
San Luis Potosi,
Mexico

UTM - Zone 14
E 449630
N 2455500
Alaquines F-14-A-88

Plan View



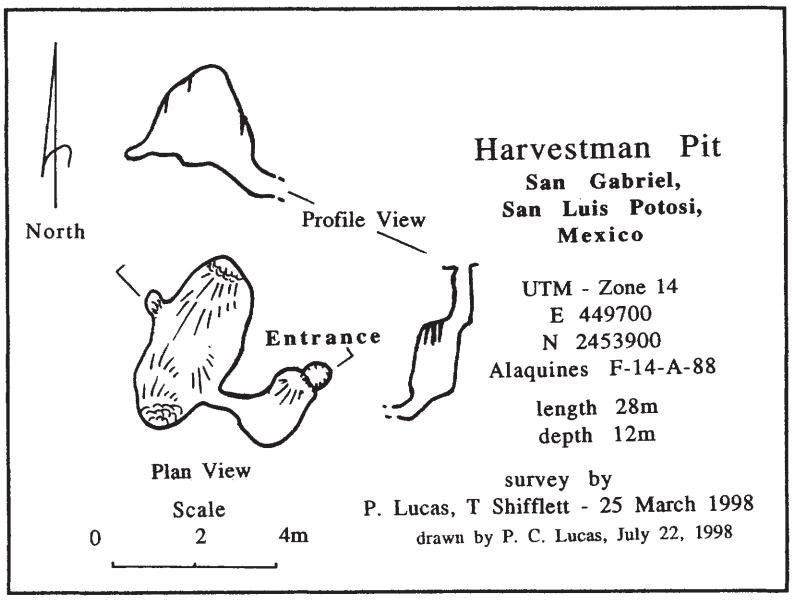
depth 19.7m

survey by
P. Lucas, T Shifflett - 18 March 1998

This cave has clean washed walls with sharp edges. It is a wet weather input

310-degree Profile View

drawn by P. C. Lucas, July 22, 1998



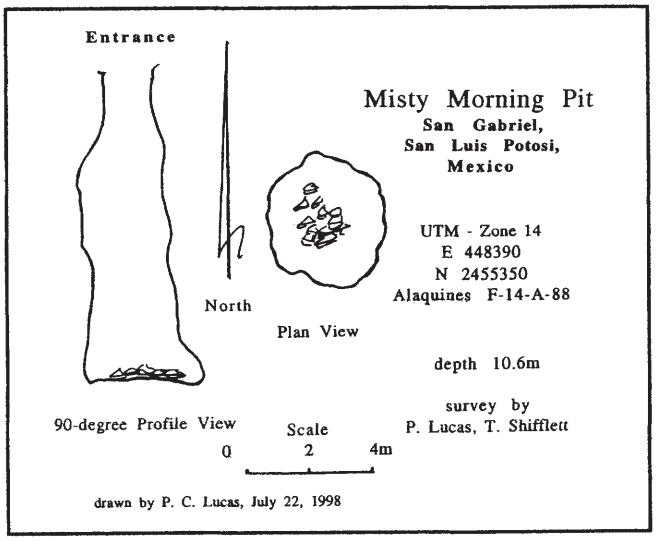
Harvestman Pit

San Gabriel,
San Luis Potosi,
Mexico

UTM - Zone 14
E 449700
N 2453900
Alaquines F-14-A-88

length 28m
depth 12m

survey by
P. Lucas, T Shifflett - 25 March 1998
drawn by P. C. Lucas, July 22, 1998



Misty Morning Pit

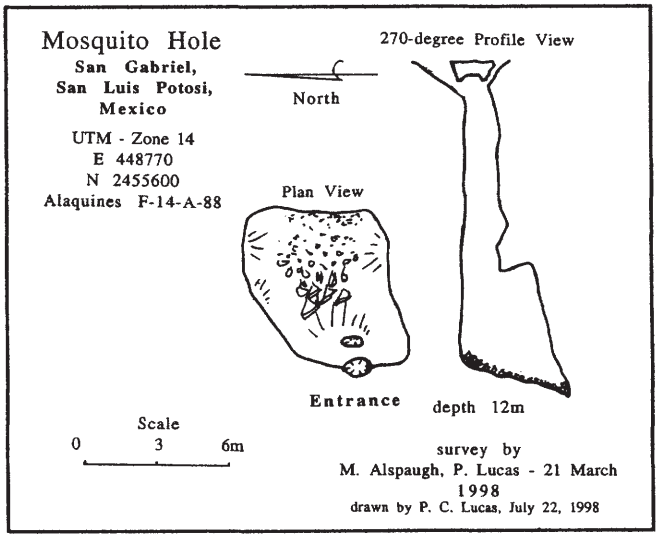
San Gabriel,
San Luis Potosi,
Mexico

UTM - Zone 14
E 448390
N 2455350
Alaquines F-14-A-88

depth 10.6m

survey by
P. Lucas, T. Shifflett

drawn by P. C. Lucas, July 22, 1998



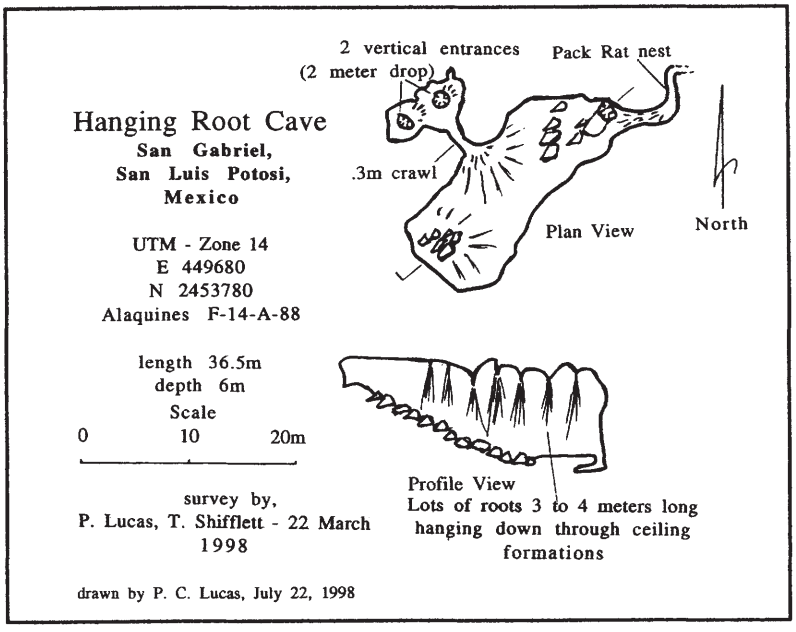
Mosquito Hole

San Gabriel,
San Luis Potosi,
Mexico

UTM - Zone 14
E 448770
N 2455600
Alaquines F-14-A-88

depth 12m

survey by
M. Alspaugh, P. Lucas - 21 March 1998
drawn by P. C. Lucas, July 22, 1998



Hanging Root Cave

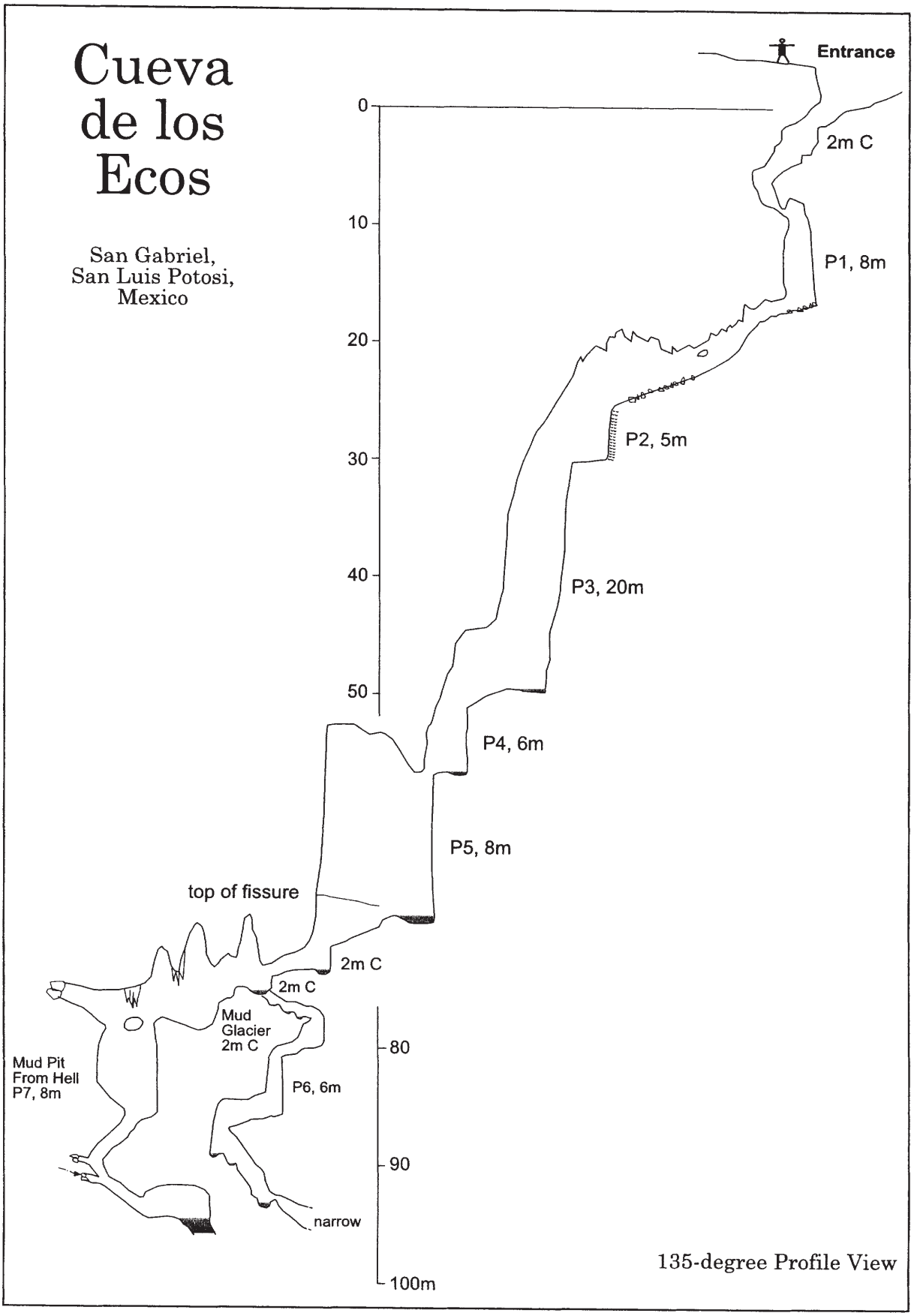
San Gabriel,
San Luis Potosi,
Mexico

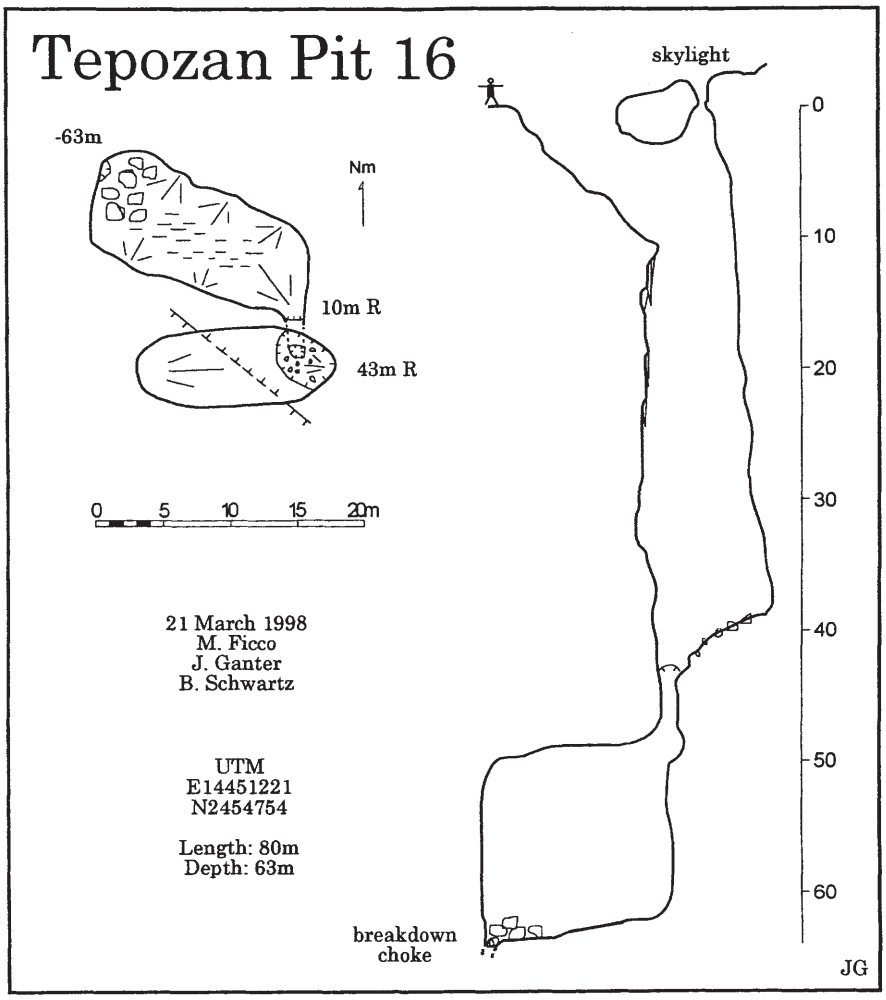
UTM - Zone 14
E 449680
N 2453780
Alaquines F-14-A-88

length 36.5m
depth 6m

survey by,
P. Lucas, T. Shifflett - 22 March 1998

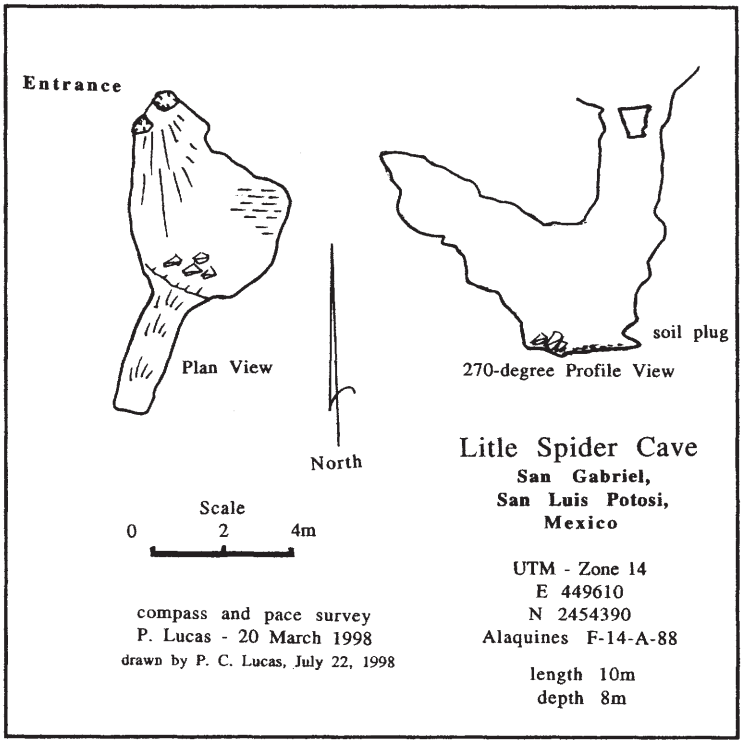
drawn by P. C. Lucas, July 22, 1998


Cueva de los Ecos
San Gabriel, San Luis Potosi, Mexico
Entrance
0
10
20
30
40
50
2m C
P1, 8m
P2, 5m
P3, 20m
P4, 6m
P5, 8m
top of fissure
2m C
2m C
Mud Glacier 2m C
Mud Pit From Hell P7, 8m
P6, 6m
80
90
narrow
100m
135-degree Profile View



Sierra Los Llanitos, S.L.P.

La Sierra Los Llanitos se encuentra a cerca de dos horas después de manejar hacia el sureste, a partir de Ciudad del Maíz, San Luis Potosí. Algunos espeleólogos exploraron parte de esta sierra encontrando en la proximidad de la comunidad de San Gabriel varias cuevas pequeñas. La mayoría son tiros poco profundos pero dos de ellas alcanzan una profundidad de 90 metros en varios tiros múltiples que terminan en pozas, las cuales probablemente representan el nivel freático local. Se encontraron isópodos grandes en la poza de la Cueva de los Ecos y en algunas de estas cuevas viven también colonias de murciélagos-vampiro. Se visitó la parte alta de la sierra localizándose el Sótano Tepozán y el tiro Tepozán 16, de 90 y 60 metros de profundidad, respectivamente. Existen buenas probabilidades de encontrar más cuevas en el área pero todas ellas muy pequeñas.



PROYECTO ESPELEOLÓGICO PURIFICACIÓN 1997-1999 ACTIVITIES

Peter Sprouse

In the past two years PEP cavers have ranged far and wide across the project study area. Two underground camps in Sistema Purificación have added five kilometers to México's longest cave. Cueva del Tecolote, the second longest cave in the area, had nearly four kilometers added during another underground camp expedition. Across the state line in Nuevo León recent trips have finally resulted in the discovery of major caves, including the longest in that state. More detailed reports are available in the PEP journal, the *Death Coral Caver*, available from: P.O. Box 8424, Austin, Texas 78713.

SISTEMA PURIFICACIÓN

In December 1996, twenty cavers established Camp VII in the World Beyond section near the Brinco Entrance. A series of drops started the year that took off halfway down the Angel's Staircase, called the Ethiopian Sponge, intersected a horizontal passage. Upstream it went 60 meters to a blowing flowstone pinch, while downstream kept going to the north.

A team led by Jean Krejca was mapping down this when they heard a shout from the bottom of a virgin pit. It was Peter Sprouse, whose team was surveying leads up from the bottom of the Angel's Staircase. A large loop was thereby created.

Halfway down the Angel's Staircase a short climb led into a horizontal series near the Canal of Ulysses. This section, the Chuckle Way, led north to a blind pit and also south to a pit as well. This remains a good lead that could be heading off into a new area.

Meanwhile, back up near camp in the World Beyond, Taco van Ieperen became curious about a flowstone mound on one side of the trunk which cavers had been passing for years. At the top he found a blowing lead which gave access to a new stream passage, Batwing Boulevard. Directional helictite flags gave the passage its name.

After a bathtub soak the passage began climbing up a steep dip. A couple of blind routes fizzled out before the airflow was regained. The passage split and led to lead climbs. This section holds significant promise of leading to a higher entrance since it is the first passage in the system to have crossed the World Beyond syncline and is progressing up the west flank toward sinks in Nuevo León. Altogether 2298 meters had been mapped during the camp.

In March of 1997, fifteen cavers moved into Camp I not far inside the lowest entrance to the system, Infiernillo. Much of the focus was on the Confusion Tubes, which are always a pleasure to map in. The tubes are a braided, dipping maze in clean-washed bedrock.

Well over a kilometer of new tubes were mapped, including a new connection between the eastern and western sections called the Detente Tube.

To the east, the dry upper level area called Arrakis was revisited by Susie Lasko and crew, with 350 meters added in two trips and leads remaining. West of the Confusion Tubes an old lead called Napoleon's Dome was scaled using a Hitachi power drill. This resulted in the discovery of a blowing, descending passage called the Weston Way.

Hopes of bypassing the Infiernillo sumps were dashed when it degenerated into tiny tubes and various digs which proved fruitless. The efforts at Camp one produced 2245 meters of new survey.

The annual PEP "Summer Camp" of July 1997 included two trips into the upper part of the system.

Via the Brinco entrance, the Eternity Streamway was pushed, yielding 160 meters ending at the "90 Kilometer Pizza Room," named for the new length the cave, and for what the team didn't get to eat for lunch.

Entering the Franceses entrance a team descended to the Valkyrie River to push a crawl which would hopefully bypass the upstream sump. The Foghorn Passage didn't regain the river, but leads remained.

So when a large crew again gathered in the area in December 1997, three teams returned to the Valkyrie River. Two pushed the leads in the Foghorn Passage, but they all got small. The third team pushed a crawlway off the river which required trenching to get into. It opened up, and still continues as the Embouchure Passage.

Next to be pushed on this expedition was the promising area above Batwing Boulevard. The two lead climb routes were connected, and the passage continued as a forty-five degree ramp. This lead may have to await for another Camp VII trip.

SISTEMA PURIFICACIÓN AREA

In December 1996, the exploration of caves surrounding Sistema

Purificación continued.

A new pit east of the Brinco entrance, Pozo Raspacielos, was surveyed down several nice pitches to end at -77 meters. Efforts continued in Sótano de la Cuchilla to open up the blowing crawl at the bottom.

In July 1997, after more digging Maria Tehrany was able to squeeze through three constrictions into going passage. A series of mazy passages and pits were mapped for 214 meters, with the air seemingly going into another tiny dig lead.

Bev Shade led a trip back to this cave the next month, where they accomplished a lot of digging but not much new length.

The December 1997 trip concentrated on completing the surveys in this area, but a new side lead was also found. So Bev led another crew back in May 1998. In the bottom area they discovered a bypass to the drop into the Orca Battleground.

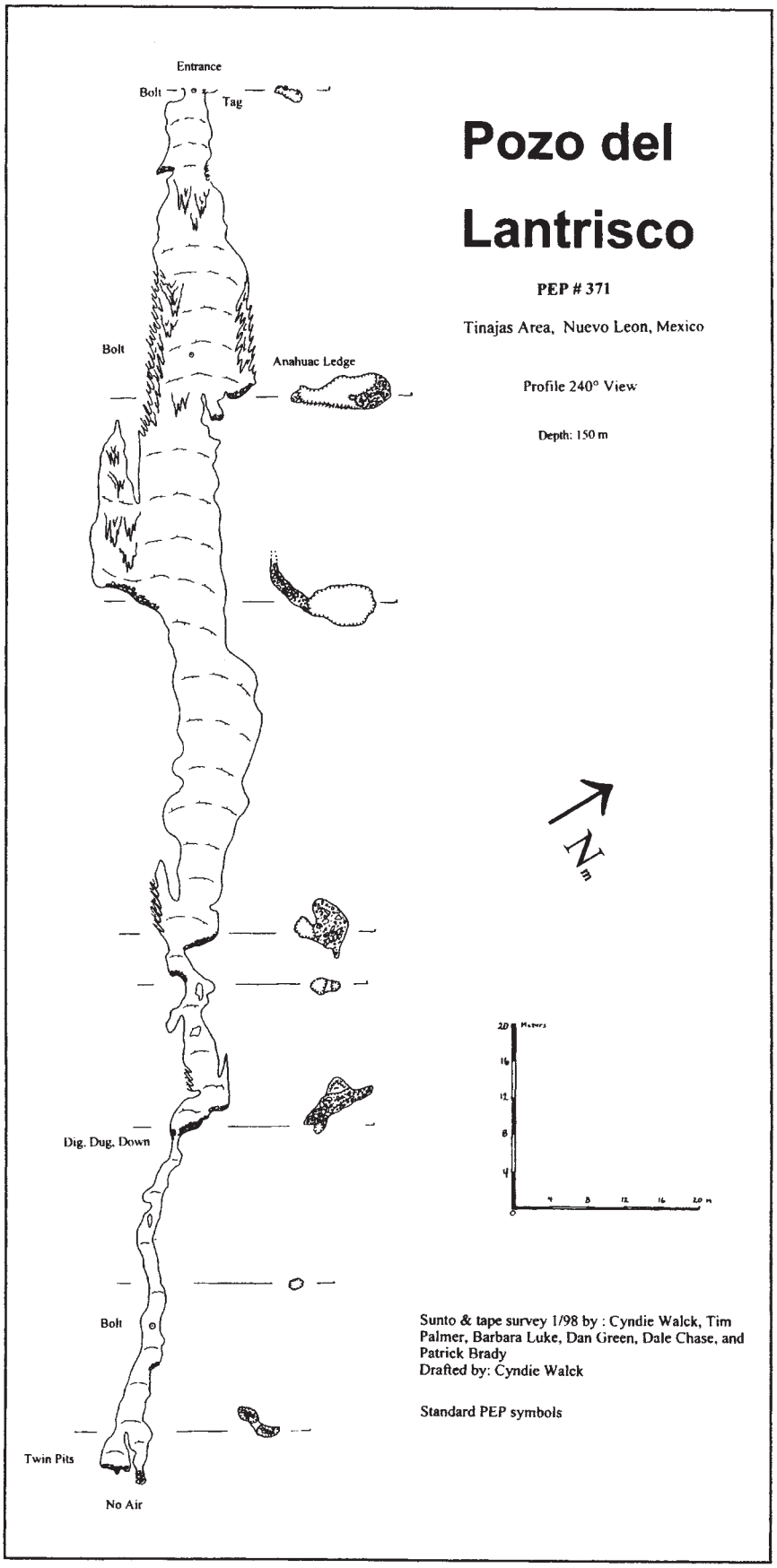
They also pushed a lead that went upwards, which included some walking passage and a climb, the Urchin Dome. Another dome and a crawl lead remain in this area. In November 1998, digging was done on leads at the lowest point in Cuchilla. Two digs looked pretty grim, while a third still shows some promise.

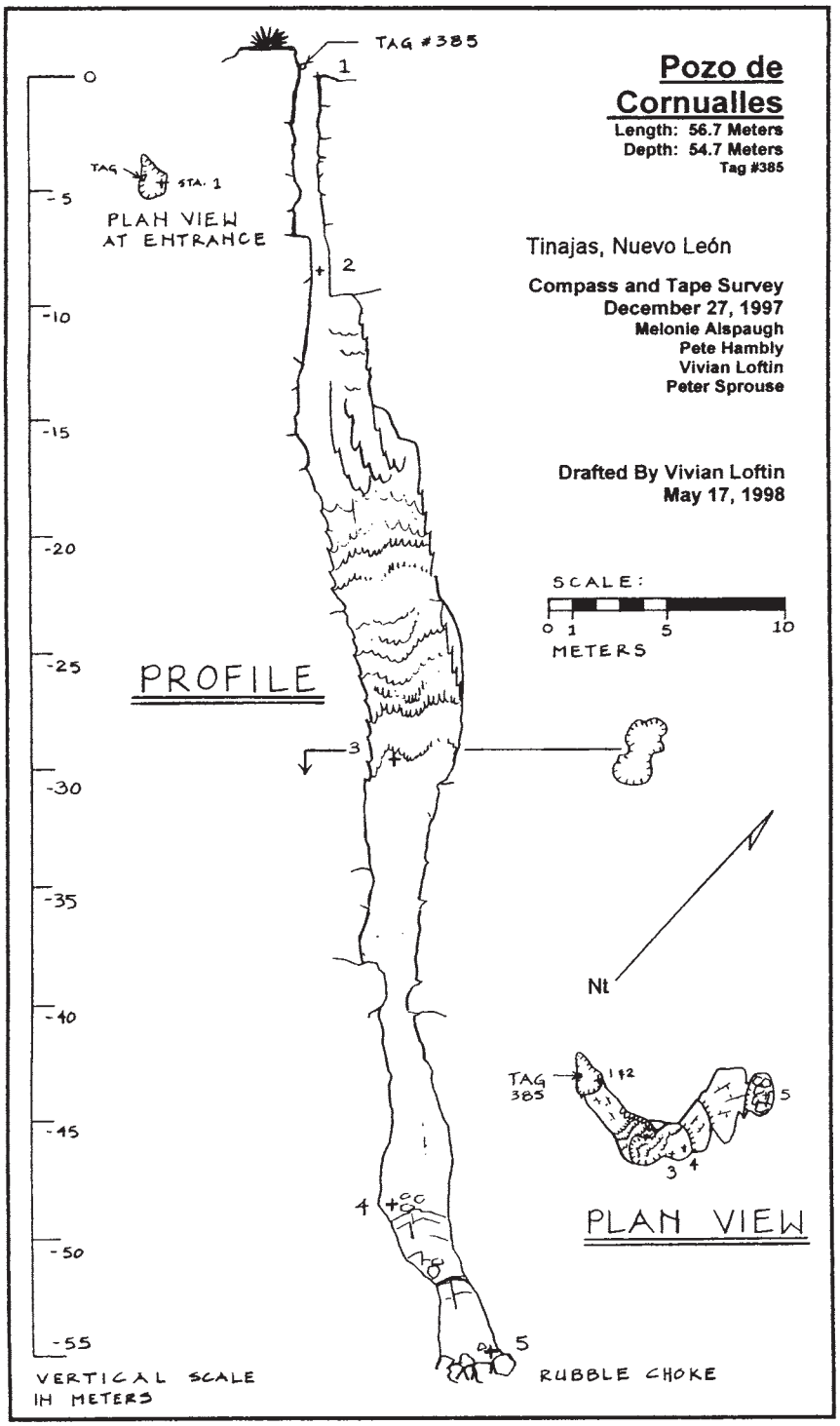
Cueva Nadolig, a promising cave above Cuchilla, was bottomed in July 1997 at an extremely narrow bedding plane, 74 meters below the entrance.

Farther south, near Revilla, a new pit was shown to the cavers, which they named Grieta de Luis in honor of the guide. This went well for five drops, finally pinching at –96 meters. A number of other pits in the area were also mapped, including 70-meter-deep Pozo de Flor de Mayo.

A local lad showed an interesting blowing crack to the cavers on the hill just south of Conrado Castillo. This looked hopeless to get into, but there was an open cave just below it.

With the return trip in December 1997, this cave, Pozo Nueces, was among the first checked. Un-





fortunately, it pinched with no great exciting leads.

A number of other small caves were documented on this trip, including a wet-weather resurgence cave between Conrado Castillo and Revilla, Cueva Avispa Araña Viuda Negra. This led to a squeeze which was passed, and to the top of a blowing drop.

Another windy lead was Entrada del Viento Alta, a lead left over from the 1970s. Susie Lasko led a team which got up a dome climb in this cave to find a tight stream crawl. This blows good, but will need to be enlarged.

Several trips in the fall of 1998 spearheaded by Kevin Stafford explored and mapped "Dragon Antler" Cave near Cuchilla, which pinched at 69 meters in depth.

YERBABUENA AREA

In December 1996, an effort was made to locate a new entrance to Cueva del Río Corona. Previous exploration in this resurgence cave had ended when climbs had reached the underside of a trash-filled sink which couldn't be dug from underneath.

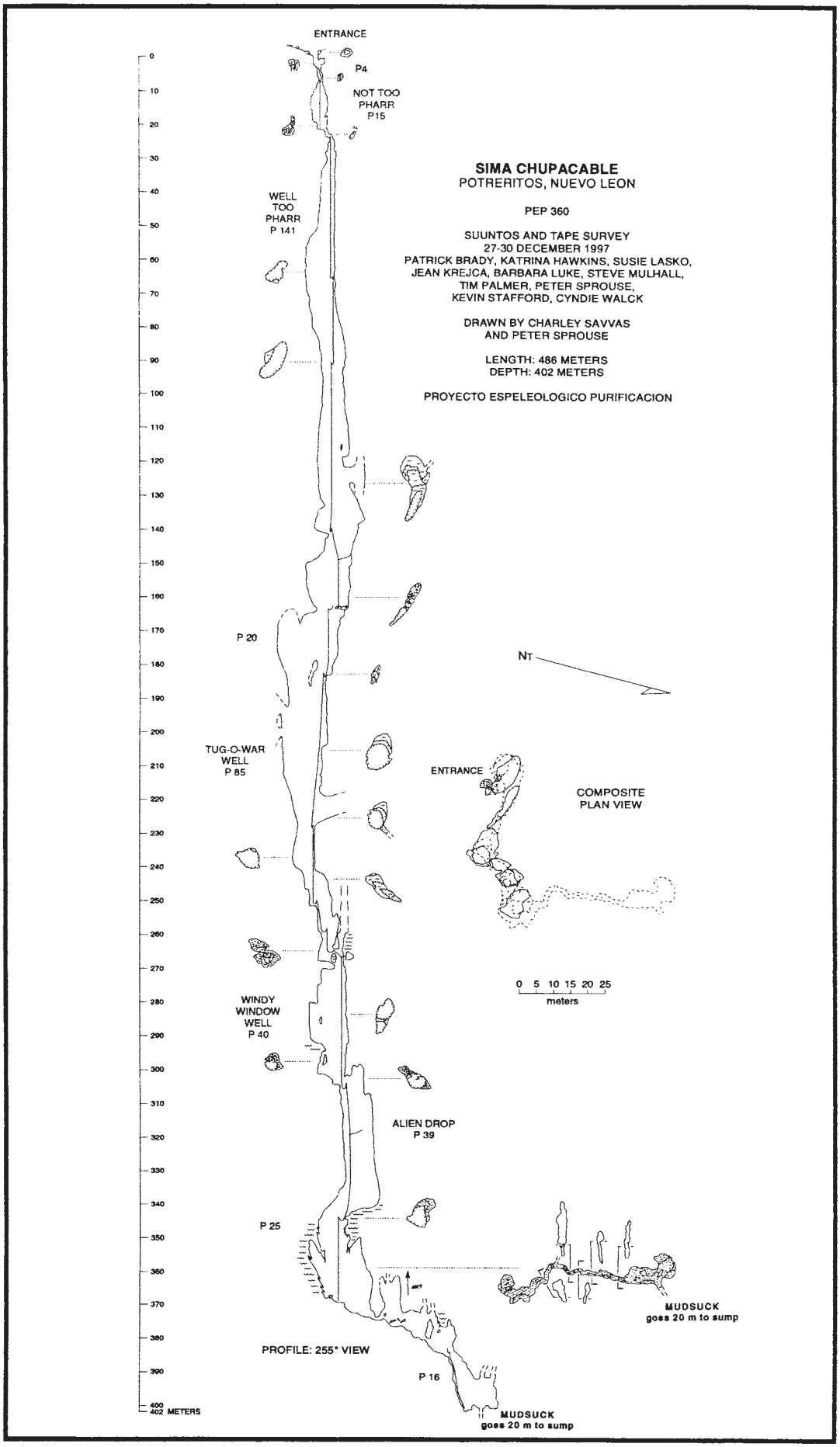
With the help of a surface survey and an Itronix laptop computer the general location was established and digging began in two adjacent sinks. In less than two hours the Río Corona had the new Año Nuevo entrance.

This made for a much easier route into the upper levels of the cave where a multi day, and ultimately unsuccessful, bolt climb was made in search of a connection to Sótano de Las Calenturas. A new entrance found near Calenturas did result in a new entrance to that cave, called Flor de Peña.

TINAJAS AREA

In April and May 1997 Julie Jenkins, William Russell, and Charley Savvas searched for caves around Tinajas, Nuevo León, five kilometers west of Sistema Purificación.

They discovered quite a few pits, mapping Sima Colgada (47 m) and Sótano del Paistle (38 m). Their most interesting discovery was a tiny hole taking a huge draft of air. This


ENTRANCE
P4
NOT TOO PHARR P15
WELL TOO PHARR P 141
P 20
TUG-O-WAR WELL P 85
WINDY WINDOW WELL P 40
ALIEN DROP P 39
P 25
P 16
PROFILE: 255° VIEW
MUDSUCK goes 20 m to sump
MUDSUCK goes 20 m to sump
402 METERS
SIMA CHUPACABLE
POTRERITOS, NUEVO LEON
PEP 360
SUUNTOS AND TAPE SURVEY
27-30 DECEMBER 1997
PATRICK BRADY, KATRINA HAWKINS, SUSIE LASKO, JEAN KREJCA, BARBARA LUKE, STEVE MULHALL, TIM PALMER, PETER SPROUSE, KEVIN STAFFORD, CYNDIE WALCK
DRAWN BY CHARLEY SAVVAS AND PETER SPROUSE
LENGTH: 486 METERS
DEPTH: 402 METERS
PROYECTO ESPELEOLOGICO PURIFICACION
NT
ENTRANCE
COMPOSITE PLAN VIEW
0 5 10 15 20 25
meters

was dug open to a 15-meter pit, below which was a constriction into a very deep pit. This was enlarged and Charley was able to get to the bottom of this pitch after a 140-meter descent, only to find another drop taking air.

This cave, which after several iterations became known as Sima Chupacable ("Ropeeater Pit"), was then the focus of the December 1997 expedition. It was mapped down nine drops to –402 meters, at which point the air seemed to be lost up a dome. A nasty low airspace mud duck was explored past the survey, down another 20 meters to a sump.

Twenty-four other caves were mapped in the Tinajas valley on this expedition. The deepest of these was Pozo del Lantrisco, a small entrance that went down several pitches to a depth of 150 meters.

Sima de las Malas Mujeres was 71 meters deep, and Pozo Cornualles was 55 meters deep. Pozo Sin Sexo was still going when the expedition left, and seemed to be at least 60 meters deep. Likewise, a blowing cave north of the village, Cueva de Katrina, was left blowing and going. When this cave was revisited in December 1998, it unfortunately pinched.

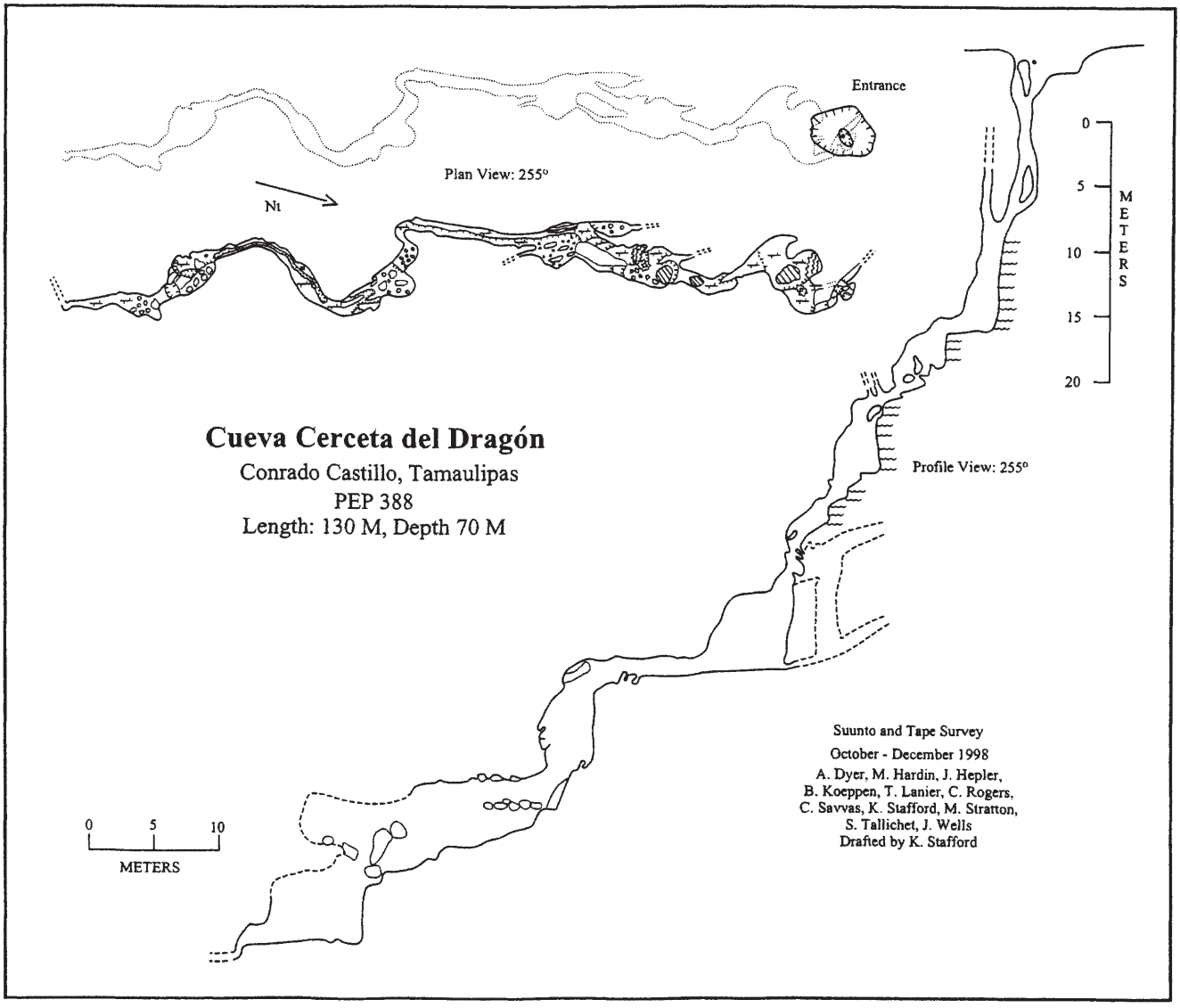
SOUTHERN KARST

Sótano de San Marcos, located near the southern extreme of the Purificación karst, had not been visited for fourteen years when a new effort was organized in March 1998.

Previously mapped at 1019 meters long and 126 meters deep, numerous dome leads had remained. With this in mind six cavers entered the cave for a two day stay.

One easily accessible lead, the Jolly Rancher, went down a short drop to a sump as expected. The main effort concentrated on two lead climbing projects. At Moaning Rock Dome, Susie Lasko led the first pitch successfully. Peter Sprouse began the next one, but ran out of protection.

Farther into the cave was the main lead, Flatrock Canyon. Charley Savvas and Tim Stich bolted a long traverse to reach going pas-



sage. Several free-climbs led to a large dome room, the Hall of the Blood-sucking Smurfs. This was also climbed, at least partway, to where a canyon led off.

This became plugged with nasty overhead breakdown, so the smurf dome still needs to be climbed to the top. Also on this trip, the cavers were shown another cave just up the canyon from San Marcos, Cueva de Anastasio, which was explored for 70 meters to a crawl. Pictographs were seen in the entrance. A tiny hole in the arroyo below this cave blows air, and may connect to San Marcos which is directly below it.

In the days prior to the San Marcos trip, another team had revisited a resurgence cave ten kilometers to the north, called Ojo Encantado. This previously sumped just inside the entrance, but due to dry conditions was now open.

Jean Krejca and Steve Taylor were able to swim across a lake to reach a series of waterfall climbs. It was left as going passage, which we hope to push again in 1999 if water levels permit. It is hoped that further studies in these two southern caves will help reveal the destination of groundwater flow along the east flank of the Jaumave Valley.

CUEVA DEL TECOLOTE

Sixteen cavers, including three from Mexico and one from Canada, participated in the March 1999 PEP expedition to Cueva del Tecolote, Tamaulipas.

The objective of this trip was to work leads accessible from Camp I, which had not been not occupied since 1990. No mapping had been done in the cave since the Camp III trip six years earlier.

One lead of prime interest was the climb at Jellybean Junction. This led to the discovery of a new flowing stream, the Jellybean River. It was pushed southward for 1000 meters, in the general direction of Sótano de Trejo, to a sump.

Most other mapping was concentrated in the spiny breccia zone of the Mickey Mouse Maze. The Missouri Crawlway lead developed into an extensive new section called South Park, with 800 meters mapped and many leads remaining.

A bit farther south in the maze, the Gargoyle Gallery extended into the Tazmanian Trunk, which wound through numerous loops to tie into the Chihue Freeway near Ruthy's Ear Duct. This created a large loop, and numerous new leads as well. Altogether, 3918 meters were added to the survey, making the cave 35,949 meters long.

CRETACEOUS PARK

The December 1998 expedition set off to check a new area along a shale contact near Garza, Nuevo León. The southern section of this contact, informally known by cavers as Cretaceous Park, had yielded a handful of interesting but not particularly significant caves over the previous ten years.

This time the area north of Infierno Canyon was the target, where numerous stream sinks could be seen on the air photos. These sinks proved extremely productive, with nearly every one yielding a major cave.

At the south end of the line of sinks by the canyon was Sumidero Anaconda, a large entrance under a high headwall. This cave featured a spectacular series of canyon passages interspersed with numerous rope drops. It ended at a depth of 278 meters in an unpromising flowstone pinch. Length was 1246 meters.

The next big cave along the contact was Sumidero Suchomimus, where a large valley disappeared into two entrances. One took the arroyo in a 4-meter pitch, while the adjacent second entrance was an 80-meter drop with a waterfall entering partway down.

The arroyo entrance went down a series of short drops to tie into the other entrance partway down the drop, forming the waterfall. Numerous infeeders off this route led to major canyon passages and another entrance. Downstream from the bottom of the 80-meter pit a stream passage led to another

Peter Sprouse
April 1999

PURIFICACIÓN SPELEOMETRY

Long Caves (Length in meters)

1	Sistema Purificación, Tamaulipas	90470
2	Cueva del Tecolote, Tamaulipas	35949
3	Sótano de Las Calenturas, Tamaulipas	8308
4	Cueva de La Llorona, Tamaulipas	3540
5	Sumidero Suchomimus, Nuevo León	2614
6	Sótano de la Cuchilla, Tamaulipas	2505
7	Cueva del Río Corona, Tamaulipas	2301
8	Cueva Paraíso Difícil, Tamaulipas	1799
9	Cueva del Borrego, Tamaulipas	1354
10	Sumidero Anaconda, Nuevo León	1246

Deep Caves (Depth in meters)

1	Sistema Purificación, Tamaulipas	957
2	Cueva del Tecolote, Tamaulipas	424
3	Cueva de La Llorona, Tamaulipas	412
4	Sima Chupacable, Nuevo León	402
5	Sumidero Suchomimus, Nuevo León	317
6	Sumidero Anaconda, Nuevo León	278
7	Cueva de las Calcetines Rosas, Nuevo León	222
8	Sótano de la Cuchilla, Tamaulipas	207
9	El Hundido, Tamaulipas	186
10	Cueva Paraíso Difícil, Tamaulipas	178

drop series 100 meters deep. Beyond, a long stream canyon eventually pinched in flowstone. At 317 meters deep and 2614 meter long, Suchomimus is the longest cave in Nuevo León.

To the north of Suchomimus was another stream sink, Cueva de las Calcetines Rosas. This dropped more steeply than the others through steeply dipping, clean-washed bedrock. Exploration stopped at –223 meters at the top of a deep pit with a river below. This is heading toward yet another arroyo cave father north that was discovered as the expedition ended, Sumidero Tiranosaurio Rex. Needless to say, this area will be the scene of a lot of future PEP activity.

Proyecto Espeleológico Purificación, 1997-1999

En el campamento subterráneo de diciembre de 1996 al Sistema Purificación se visitó "The World Beyond", El Mundo del Más Allá, topografiándose 2,298 metros de nuevos pasajes. En marzo de 1997, del campamento cerca de la entrada a Infiernillo resultaron 2,245 metros topografiados, incluyendo dentro de estos más de un kilómetro dentro de los Tubos de la Confusión. Dentro de otras cuevas que también se exploraron y topografiaron en los alrededores del sistema. Cerca de la Yerbabuena se limpió una nueva entrada superior a la Cueva de El Río Corona. Se intentó conectar este sótano al sistema pero sin buenos resultados. Después de una visita en abril y mayo de 1997, se comenzó a trabajar en una nueva área cercana a Tinajas donde se exploraron muchas cuevas, incluyendo la Sima Chupacable. Chupacable desciende casí en un ángulo de noventa grados hasta una profundidad de 402 metros. Después de estos la cueva sigue por aproximadamente veinte metros más por un pasaje pequeño y lodoso, sin topografiar, hasta un sifón. En el campamento subterráneo de marzo de 1998 se adicionaron 3,918 metros más a la longitud topografiada de la Cueva del Tecolote. En diciembre de 1998 se visitó una nueva área a lo largo del contacto lutita-caliza, cercana a la comunidad de Garza, Nuevo León y al norte del Cañón El Infierno. Varios arroyos se hunden al pasar el agua de la lutita a la caliza. De entre estos el Sumidero Anaconda alcanzó una profundidad de 278 metros hasta terminarse en formaciones de coladas estalagmíticas. El Sumidero Suchomimus tiene dos entradas: una pequeña que viene de un arroyo y un gran tiro de 80 metros. Este sumidero se topografió hasta 317 metros de profundidad y 2614 metros de longitud. La Cueva de los Calcetines Rosas, otro sumidero, desciende de una forma más vertical que las otras y todavía tiene pasajes sin explorar a una profundidad de 223 metros desde donde un río sigue a un tiro profundo.

Dos Aguas Area, Michoacán

Chris Lloyd

1996 - 1997 EXPEDITION

Over New Years 1996-97 a "fast and efficient team," gathered from four different Mexican caving clubs, converged on the Dos Aguas area of southwest Michoacán to confirm the existence of a reportedly big river cave.

The area was first identified by Peter Sprouse who passed on this tip to Mike Fischesser who organized a cave scooping expedition in 1984. Just before the end of this trip they were led to a cave that looked like it would finally be the "key to the underground hydrology of this vast area."

In their last three days they scooped some 3km of big passage and vowed to return. Another large group returned in 1985 specifically to explore this cave (named Cueva Dos Aguas by them; *AMCS* #14).

After three more trips into the cave they pronounced it "fully explored" and estimated a length of 5km. It reportedly contained a "fair sized mountain stream" which proved "very demanding, sporting and challenging" to explore and caused the scoopers to suffer from the cold after only five hours even though they all wore wetsuits.

Presumably this is the reason they didn't survey what they scooped even though it was presented as "a worthy survey project," but one "that would require a fast and efficient crew."

At least Cueva Dos Aguas did have a stream and they did explore amazingly close to 5km of passages. It was hardly finished though and proved to be a fun, thoroughly enjoyable cave to survey, and definitely a worthy project.

In a written reply to my request for information on what they did in the area, Fischesser expressed his disappointment on what they found and said "they didn't think that the area had potential to host a big cave." I wasn't aware that North Carolina was so well endowed with caves over 5km long and with virtually every passage being big, easy stomping passage to generate such an attitude.

They provided no info on any of the reportedly thirty plus caves they found, not even a vague sketch of where they were generally located.

With a preliminary survey length of 4.66km it is the longest cave in Michoacán and even places well up on the list of long caves in Mexico. That a group would come all the way down from the States for a second expedition specifically to explore that cave and NOT survey a thing boggles my mind (and that is being polite).

Our group of nine cavers culled from the ranks of SMES, UNAM, UdeG and Zotz arrived on December 27th and easily located a beautiful campsite complete with a running stream that sank 150m past the camp.

With local directions we located the entrance to Cueva Grande de Puerto Hondo (previously referred to as Cueva Dos Aguas by the Americans) which was a lovely black hole 12 by 15m across (less than half the previous description) with roof pendants just visible from the nearby road. The same afternoon Vicente stumbled across a vertical cave the Americans estimated to be 120m deep.

The first day underground had a team rigging down to the river while another began surveying in from the entrance. Meanwhile Vicente and Curro were dropping pits in the cave they found.

The large sloping entrance of Cueva Grande de Puerto Hondo opened up into a considerable entrance chamber 60m by 40m across sloping down to the left (south). A small inlet came in high on the right, and exiting out down on the left which were both surveyed about 50m to their ends. The upper one could possibly be pushed further through a squeeze. The main way on is straight across the chamber to the top of a 7m-pit which offers a surreal view back out to the fern covered entrance slope past spectacular roof pendants.

A tall, fossil canyon passage leads down to the second drop which lands on a large sand pile accumulating from a semi-active inlet high up on the left. Three ways on presented themselves at this point and we chose the low crawl on the right to avoid disturbing hibernating bats in the stooping passages on the left.

This route also seemed to be carrying the most airflow. At the end of the crawl another three ways were possible, all leading to drops. We choose the middle route rigging off natural anchors down past a 4m flowstone pitch.

A little stooping brought us to the final pitch or climbdown. We choose to rig it from a bolt in the roof as we figured a fair bit of traffic over the loose rocks on the climb could led to a potential accident. This drop led us into a tall, keyhole shaped canyon, which is an overflow bypass to the main streamway. From here teams pushed up and

downstream the next day.

I led the first upstream foray in quite a literal sense as my lead tape person (Nancy) had never surveyed before and didn't know how to swim! While I wouldn't exactly call it a "good sized mountain stream" (well perhaps I would if I lived in the small hills of Carolina that they call mountains), it probably had about 0.5 cumecs of flow which definitely did pond in places requiring swimming.

The first actual swim comes about 15m after entering the upstream route, but only lasts about 20m. There follows nice wading in knee to waist deep water through torturously, twisted and sculpted passages averaging about 4m wide and at least 8m high.

Generally the roof was not visible as a fossil phreatic section could be glimpsed above the tall canyon we were in. Even there the current presented no problem—though it certainly sounded like we were in a raging torrent which would reveal itself as only a 0.5m-high cascade that echoed magnificently in the tall passages.

Nancy gamely followed in my wake wearing her borrowed divers life vest while the only challenge the cave presented to surveying was that Soriano had to remember the compass and inclinometer readings because the noise of the cascades made shouting virtually impossible.

From the put-in we surveyed 780m up to the first inlet and called it a day. No more real swims barred the way as we could push or pull ourselves across along the wall of the various plunge pools. There were three "tricky" cascade climbs, although they were easily passed on the right side, the tallest one being about 4m tall. A piece of extra webbing could be tied off to aid those following and did come in handy as the hardest part was finding a good enough handhold so that you could drain the water out of your Wellies and be able then to lift up your leg.

Ramón and the young lads (Jesus and Tachi) pushed and surveying the route downstream. They encountered more in the way of small cascades and plunge pools though also noted that no actual swimming was necessary. The first and second sump bypasses were passed and they stopped at the third sump which was closed (as it was on the Americans first trip). They did manage to locate a likely bypass to this which the Americans didn't describe. They netted 773m bringing the cave up to 1997m in two days.

In this same time Vicente and Curro had bottomed Cueva de Vicente in seven drops for a total depth of 95m and a length of 203m. Part way through a large chamber was passed with plentiful decorations and the bottom left at a small, muddy hole with no airflow.

The last day of the year saw two more teams continuing in the streamway and I was impressed that we actually got underground well before noon—quite a rarity for a caving expedition. I went upstream again, this time with Vicente and Claudia, also novice surveyors, in their first wet cave. An hour of sublime splashing got us to the first inlet and then into the stomping passage. This upper section was slightly larger and lacked the pools of the previous section.

Four to six meter wide passage cruised by in generally ankle deep water. We occasionally became annoyed when the survey legs dropped below 20m. The further we went, the better decorated it became with beautiful flowstones and draperies coating the walls.

Occasional stal bosses would almost block the passage but we could either sneak by or duck underneath them. Just before the second inlet (actually the third, though the second had no penetrable passage), a nice gallery was loaded with stalactites of all descriptions.

After 1222m we called a halt at a rimstone dam and gour pools that marked the main second inlet. Not because we were cold or tired, (it was only 4.5 hours of surveying) it just seemed like a good place to leave it (and I knew we had gotten our 1km minimum).

Not a bad way to finish the year with what is possibly my best day of surveying ever, both for total length and pleasant, enjoyable and well decorated passage.

Ramón and the young lads did manage to bypass the three separate sumps that make up the third sump and dropped back into the active river from 20m up in the phreatic fossil bypass. Continuing downstream past a 20m tall, down-climbable cascade they came to the same low gravel crawlway that halted the Americans.

Disappointed, they finished off by surveying all the side passages in the downstream section including 100m up the Blackwater Inlet which passes right beneath the entrance chamber likely on its way to meet up with an active entrance about 200m further up the main doline.

Upon further questioning (and after various fluid refreshments) it was established that there was indeed airflow in their bypass route (while passing the antlion traps) and that the fossil passage did continue across the other side of their 20m drop. By bolting around the wall it looked hopeful that a way on can be followed.

The amount of air pouring down the entrance series and the size of the upper phreatic passages above the active streamway bodes well for there being passable bypasses to further downstream sumps. We will definitely being going back to confirm that hope.

The final mapping trips concentrated on finishing the upstream section and the inlet passages. I commandeered the Gour Inlet with Vicente and Curro as our previous look-see suggested that this would be the more photogenic of the two. It was. The slightly warmer water was actively depositing copious quantities of $CaCO_3$ forming a staircase of gour dams that we followed up for about 300m. In places the passage was over 10m wide and still plenty tall.

At one point we had to scale a 4m-high vertical dam which fortunately had a calcite cemented slab projecting over its rim that I was able to tie off with webbing to assist the shorter members of our team. Eventually the ceiling came down and we had to squeeze

through breakdown blocks before it opened up again into one of the best decorated galleries in the cave. We, of course, had left our cameras back on the other side of the squeezes.

Beyond that the inlet split and we could only follow the right branch in stooping passage to a breakdown blockage. About 20m before the end a small opening on the right afforded access to a muddy climb over big blocks that would appear to be accessing the space above where the breakdown blocks at the end of the main passage had come from.

That gave us a good objective to return for. Presumably, we went past the Manana Dome that the Americans describe as their farthest point, surveying a total of 422m.

We photographed our way out, though mostly wasted our time, for as it turned out our combined flash power was not enough to light up the large passages, even with 400ASA film. It was also apparent that putting flashes in the center of the passages pointing out at the wall is much more efficient then the reverse.

If we had taken the time to use a tripod and the bulb setting, then we could have gotten fine results with what we had, but that would have taken time that we didn't have. Back in the main streamway the passage widths cooperated in generating some decent photos and Curro, our photo model and slave person, was incredibly patient in being asked to "hold still" for "just one more" by the trigger happy photographers.

Ramón, meanwhile, had finished off the first inlet as far as a wet crawl (about 100m up) and then Curro headed up to finish off the main streamway (which is probably the actual inlet, with the gour dams having raised the level of the floor so much to make it appear that it is the inlet).

I had told him to look for a flagged station next to a flowstone inlet as his starting place so he dutifully began surveying at the second inlet (the false one) and thus resurveyed about 600m of main passageway before getting to his real starting point where I had left him a note. They still managed to finish another 450m to the first upstream sump before calling it a day, leaving the bypass for next years expedition.

At the end of 1996-97 expedition, the surveyed length of the cave was 4666m with more to be done at both the up and downstream extremities. Travel time from the entrance to the downstream end is about one hour while it takes two hours or so to get to the top end. Nowhere are there any serious difficulties or strenuous situations as attested to by the novices who participated in the expedition.

We all used wetsuits in anticipation of the cold water described by the previous explorers, but many of us will forgo those next year in favor of fury suits with a PVC oversuit as it just isn't that cold. Wellies with neoprene socks is the footwear of choice as it should be in any wet or cool cave.

In fact in this cave the coldest place was found to be in the lower part of the entrance series before you even got wet. If you were sitting where our third pitch was located you very quickly got chilled, whereas if you moved over 5m to the top of one of the alternatives you could feel the warm air coming up from the stream section below.

Vicente and I finished off our film while de-rigging on the final day and then surveyed 35m into the nearby active entrance that is likely the source for the Blackwater Inlet surveyed up by Ramón and company. On our way back to camp we poked into a tight entrance that I had spotted blowing cold, wet air.

It immediately opened into a 5m pit below which could be heard running water. We left it for the next years exploration, along with two other much bigger entrances that were re-conned to where running water could be heard as well. All these are well situated to drop into the lower downstream section well past our limit of exploration. So even if our fourth sump bypass doesn't go we still have a few back ups with excellent potential.

Geologically, the limestone in the Dos Aguas area is part of the Morelos Formation which spans the wide part of southern Mexico from Chiapas to Jalisco. This section though is one of the few that has rudist fossils indicating its status as an actual reef limestone that appears to have been built directly on top of basalt and other volcanic flows.

The floor of the furthest reaches of the main streamway was actually on exposed basalt and other exposures of altered intrusive rocks were seen in the main doline we were working. They were too altered to positively identify. These altered intrusives are likely responsible for the uplift of the limestone to the present 2000m elevation.

Unfortunately, because of the strong alteration a mining company has staked a large mineral exploration claim over the whole area. So, in the not too distant future we may be racing a drilling crew in the search for where the caves are. Because of this, no north arrow is plotted on the maps.

The participants for '96-'97 were: Chris Lloyd, Ramón Espinasa, Vicente Loreto, Jose Antonio Soriano, Nancy Trego, Francisco Ruiz ("Curro"), Cladia Galicia de Curro, Humberto Tachiquin ("Tachi"), and Jesus Reyes ("Bruce").

1997 - 98 EXPEDITION

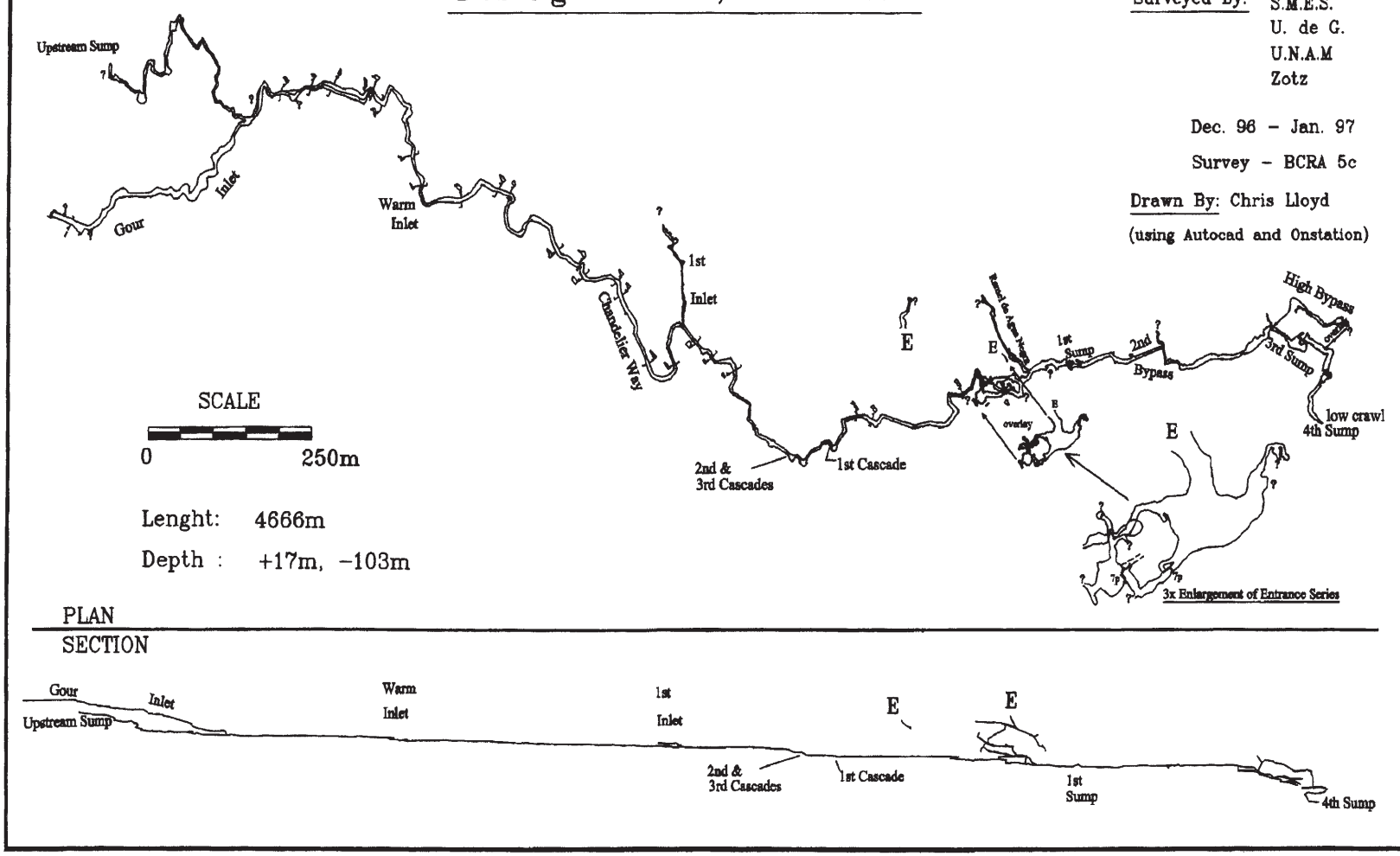
The Christmas - New Years 1997-98 holiday season saw a return visit to the Dos Aguas area. Over a two week period a group of up to seventeen cavers, from three different countries, managed to survey a little over 3km of new cave along with another 3km of surface survey to tie them all together.

While exploration continued in our main cave Cueva Grande de Puerto Hondo, now renamed Cueva Vinata, five other caves were explored as well, some of them with some impressively large passages and chambers.

The main target of the expedition was the highly desired, fourth sump bypass in Cueva Vinata. Vinata is Spanish for an alcohol still—the remains of which are located just near the entrance and

Cueva Vinata

Dos Aguas Area, Michoacan



according to the locals who live closest, give the cave its name.

The first day saw a large group rigging the entrance series and heading downstream to take photos and look for the bypass. We found the water levels to be a bit higher this year, probably only 10cm, but enough to make the small cascades more sporting and even requiring the rigging of a new pitch to avoid one new cascade.

We managed to locate the bypass area but not the actual traverse, the area being a multi-dimensional antlion trap with three different levels. The return trip upstream was quite exciting especially for the shorter members of the crew. In a couple of places you had to launch yourself across a pool against the current and try to grab a hold of the smooth wall right where the next cascade was pounding.

Nobody was jumping to go back in the next day, the thoughts of cold water hitting the chest seemed to be the limiting factor. So a group led by Ramón started the exploration of Cueva Año Nuevo, with Taco and Vicente leading ahead to rig pitches.

The cave immediately dropped two short pitches into a large downsloping entrance passage that then opens up into a very large room—about 60 by 50 by 50m high. At the bottom of the room could be heard sounds of running water in the active streamway while climbing up on the right led the team to what looked like the start of a borehole passage.

They were lured by the water though and headed down another drop over big boulders in the bottom of the big room which put them in a 5m-wide stream with reasonable current and air flow. The excitement mounted as Vicente shot off down the right-side passage and the surveyors mapped down the large main drain.

Passing nice decorations it only went 150m before hitting a sump. The air flow had disappeared somewhere previously, though there was a small hole above the sump that looked like it could be hammered to allow a body through. With 340m surveyed they called it a day, with lots left.

Still nobody was volunteering to go do the scary bolt traverse, so teams went off to continue in Cueva Año Nuevo and to start in Cueva de Los Tontos. Ramón headed up into the borehole with the women while Vicente and Nabor headed down to hammer open the sump bypass.

The borehole turned out to by almost full to the roof with flowstone, but climbing this gave them access to the Goldfinger Room. Sporting a prominent stalagmite with a golden hue, the start of this passage began with station number 007.

The room was a dead end, figuratively and literally, as some bat bones were found along with a lot of guano, suggesting that there used to be an entrance into this section but has been filled in by the copious amounts of mud associated with erosion from the logging on the surface.

The major excitement for the day was Ixta's 7m fall down a near vertical climb up loose boulders. The fall was only slightly arrested by a survey tape! The other end was being held by her sister Illi—both are daughters of Nabor who was down with Vicente at the time.

Nabor had arrived the previous day with his wife and four young daughters whose names at the time we were still trying to figure out. These two were named after two big volcanoes, one being Ixtalcuataptl outside Mexico City and the other Illiminani in Bolivia, two peaks Nabor had climbed in his younger days. I personally chose to rappel back down the climb and am amazed that she walked away from it the fall unharmed.

Vicente meanwhile had managed to pass the sump through a very tight pinch, but only found about 30m more passage that sumped again and had no air flow. He emerged in time to join the surveyors as they finished off his side passage from the previous day which also pinched out after 200m, although they passed several climbing leads along the way. Vicente pushed upstream for about 100m before his light failed, calling for a retreat.

Over in the center part of the doline a group headed into Cueva de los Tontos (Cave of the Fools) and probably Taco can best tell the tale of how the cave received its name:

"It started innocently enough. Two grizzled veterans on numerous caving expeditions, Chris Lloyd and myself would show Jazmin how caving was really done. So off we went to do a virgin pit Chris had found the year before. The entrance was expertly rigged off a boulder and a re-directional sling, the pit expertly dropped, and then I yelled down the hole to Chris, 'I forgot the bolt hammer back in camp.'

"No problem, we already had the pitch rigged. We would continue. A 10m downslide Chris prepared to rig—a tricky looking downclimb. Then Jazmin passed him by and descended it without problems and the climb was left not rigged. Chris shook his head saying, 'I must be losing my ability to judge climbs.'

"We descended an extremely pleasant streamway down into a hip deep wade in a tall narrow rift. Two more turns lead to a pitch. Bolts were needed. We had none. We decided to survey out. A tape was needed. We had none. I volunteered to run back to camp to get the bolt kit and survey tape. I was back in thirty minutes to find Chris fighting Jazmin's non-functioning, borrowed, ceiling burner in the entrance chamber. My electric became Jazmin's new light source. On we went.

"We surveyed everything to the new pitch which I rigged off two bolts. We dropped down into increasingly nicer stream passage and continued surveying in 3 to 4m wide and 10 to 20m tall canyon passage which suddenly opened up into a large chamber with numerous side leads.

"The stream passed through this chamber back into a lower section which quickly became stooping passage, then crawling in the stream. I scooped ahead a bit to confirm that it was still going

though in similarly unpleasant nature. We decided to head out in time for last daylight and somehow managed to emerge without killing ourselves."

Getting out early also gave us time to prepare to Christmas dinner as is traditionally done on Christmas eve in Mexico. A large smoked turkey (not so traditional, but appreciated nonetheless) was heated up in the bonfire and enjoyed by all. Enjoyed too much as it turned out for nobody went underground on Christmas day.

Being well rested, volunteers finally emerged to go try the dreaded bolt traverse in Cueva Vinata, again, best described in the words of Taco:

"There I dangled, 20m above the ragging river, trying to figure out how to get across the climb. Most people spend Christmas holidays with family or on the beach. Right now this didn't seem like a bad idea.

"About three hours earlier, Ramón and I had entered the cave to attempt a promising climb across a pit which looked like it headed off into blackness, bypassing the terminal sump down below. Though a proper light dimmed our hopes quite a bit, the lead still looked like it might go. It had to, as there were no other possibilities to bypass the sump.

"The walls were a muddy slime which seemed to stick to everything. Progress was made by hammering in bolts and then traversing across to get access to further bolt placements. Mud coated everything.

"Three cows tails, two footloops, a tether for the hammer, the main rope (both at the bolt and dangling down) were all a uniform muddy mess. At each moment I had to carefully trace the lines back to my harness so I wouldn't do something stupid like clip into my footloops.

"Finally, I had placed three horrible bolts and was ready to try and climb the rest. Above me was a steep muddy slope, 20m below me the gapping maw of the pit. The laws of physics were trying to get me to fall down the pit. My intentions were different. We only had 8mm static rope to climb on so a double rope was needed. I had to de-rig my working rope, pull it back in and tie the double line to myself. Ramón belayed. I slowly picked my way across, and then made the old step up the crux. The stream roared in excitement. It would get fed today.

"Then I was up. I had only one big step to go and one meter of rope left. I was safe. The lead went up a muddy, steep slope with lots of trash (plastic bottles mainly). It ended in a boulder choke after 20m. There was no apparent air flow.

"Some yelling across the pitch led to a safe return to the other side. I didn't even need to leave any gear behind. The stream roared in frustration. The laws of gravity and physics got their revenge though by making the packs so heavy that it was hard to get out of the swims and across the pools against the current all the way out."

Later an old man who lives over the hill from our campsite came by to point out caves to us and told us a bit of the history of this area. It was quite impressive to hear the account of the water flow during the hurricane about twenty years ago that directly hit this area and caused the water to flood out of the entrance of Cueva Vinata, which is some 80m above the regular stream level.

That certainly explains the large mud accumulations in places like the fourth sump non-bypass. The water ponded in the entrance doline until it flowed up and over to the south where it sank into Cueva de los Tontos. Wow.

While news of this disappointment slowly sunk in, exploration continued in the other caves. Vicente returned to Cueva **Año** Nuevo and attempted one of the climbs in the side passage off the river only to find another climb requiring bolting above. He finished off the survey upstream ending in a sump and bringing the cave up to a total of 876.9m.

The bottom streamway, side leads and bottom overflow passages in Cueva de Los Tontos were all pushed to muddy and tight finishes leaving a total for the cave of 858.9m. The 15m wide entrance right near camp was explored for 204m in Cueva del Campamento. It was mainly a big chamber hosting various bats. Quite quickly the chances for getting into the main drain below the fourth sump non-bypass were diminishing.

Even the cave that is in the next doline downhill along the main road up turned out to have been explored by cavers from Draco for some 300m. Surface wanderings and systematic searching by our injured scout (Ruth Diamant) located over thirty surface features and resulted in the dropping of about ten small pits, all blind.

Another promising looking entrance located by Ruth down the road by Pinabete went all of 39m, thought turned out to be the local hangout for vampire bats. A breakthrough was badly needed.

Fortunately the main cave wasn't finished and rewarded those who made the long trip upstream to push the Gour Passage. A small hole in the wall located last year near the end of the Gour Passage popped up into large breakdown passage.

This 30m wide borehole was mapped for almost 500m on the first go, mainly up and down over the breakdown blocks, with occasional glimpses of the stream below. This stirred the excitement as the same day Ramón and I had gone to check out a large inlet, referred to as Cueva Jumate, the old man told us was the source of the water going into Cueva Vinata.

It certainly looked the right size with a clean washed 2m-wide streamway dropping into a 15m-wide entrance. It was blocked with large logs at the bottom of the entrance opening, but some poking about and log moving located a little hole that dropped down into going cave. This restriction seemed to have protected the rest of the cave and down we went following the strong airflow. This must be the upper entrance we thought to the Gours.

Nice walking passage degenerated into crawling through sand in tubes, but at least it went. Somehow a log managed to get in that

far and we had to move it to continue along a bedding plane crawl which seemed to be taking the air. Our suspicion was confirmed when a 1m-wide hole in the floor was found with a good draft. It turned out to be a beautiful, straight, 22m drop that we christened The Rifle Barrel.

After 15m in a 1.5m diameter tube the roof cut back opening up in to a sizable chamber which one can enjoy as they spin around on the rope. The obvious way on pinched out in gravel fill immediately, but another route on was located down a rift out the other side.

This degenerated into a series of stoops through small rooms floored by sand. Then the sand led into a pool of water while the roof came down giving less than a meter of space above the water. We decided that surveying out was a preferable alternative to a full immersion in muddy water, and netted 200m, but were disappointed in our hope of dropping in on those pushing the Gour Inlet.

New Years Day saw the last hard push and got a team past the pool we left in Jumate. The passage continued through a series of similarly wet, muddy pools for almost 150m before getting into large chambers. A sump barred the way at water level, while above a boulder choke looked like it might head up to another entrance. Looks like it will have to wait for a dry season push to see where it goes.

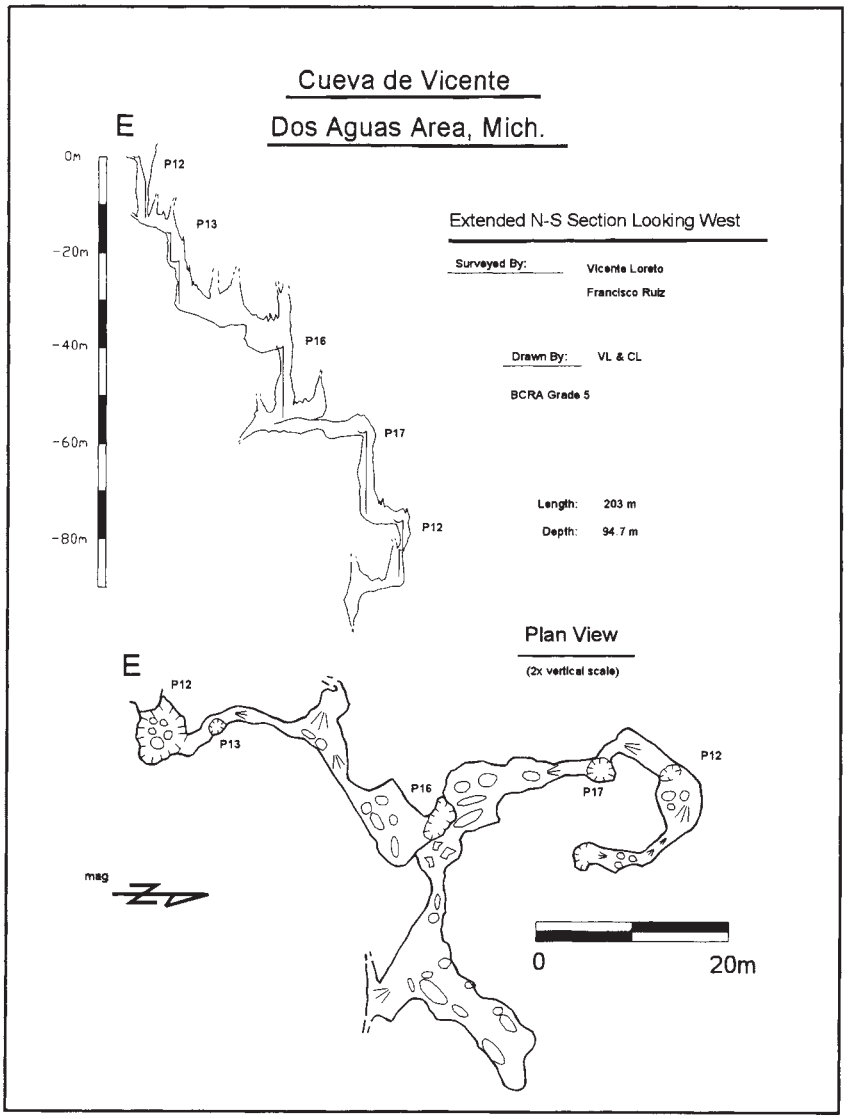
While the hoped for downstream continuation of Cueva Vinata did not come to be, all enjoyed the other five caves explored and slowly the underground picture in that doline is being completed. Also on the biology front, study of the different bats was initiated by Claudia, who is doing her Masters on a bat cave closer to Mexico City. Here she identified at least three different species including vampires bats.

After the majority had left, the five Canadians headed out via Torrecillas, on the western edge of the plateau, and spent a short day mapping the odd Torrecillas Cave. Usually caves weather down recessively, leaving lines of sink holes or open aired cave segments, but here the bit of limestone with the cave in it was a raised ridge holding the cave in it.

An upper segment went upstream under the road for 86m in nice walking / wading canyon passage. Following the stream out the entrance and across the open grazing field you can continue through 72m of the Remnant in the Ridge which features numerous skylights.

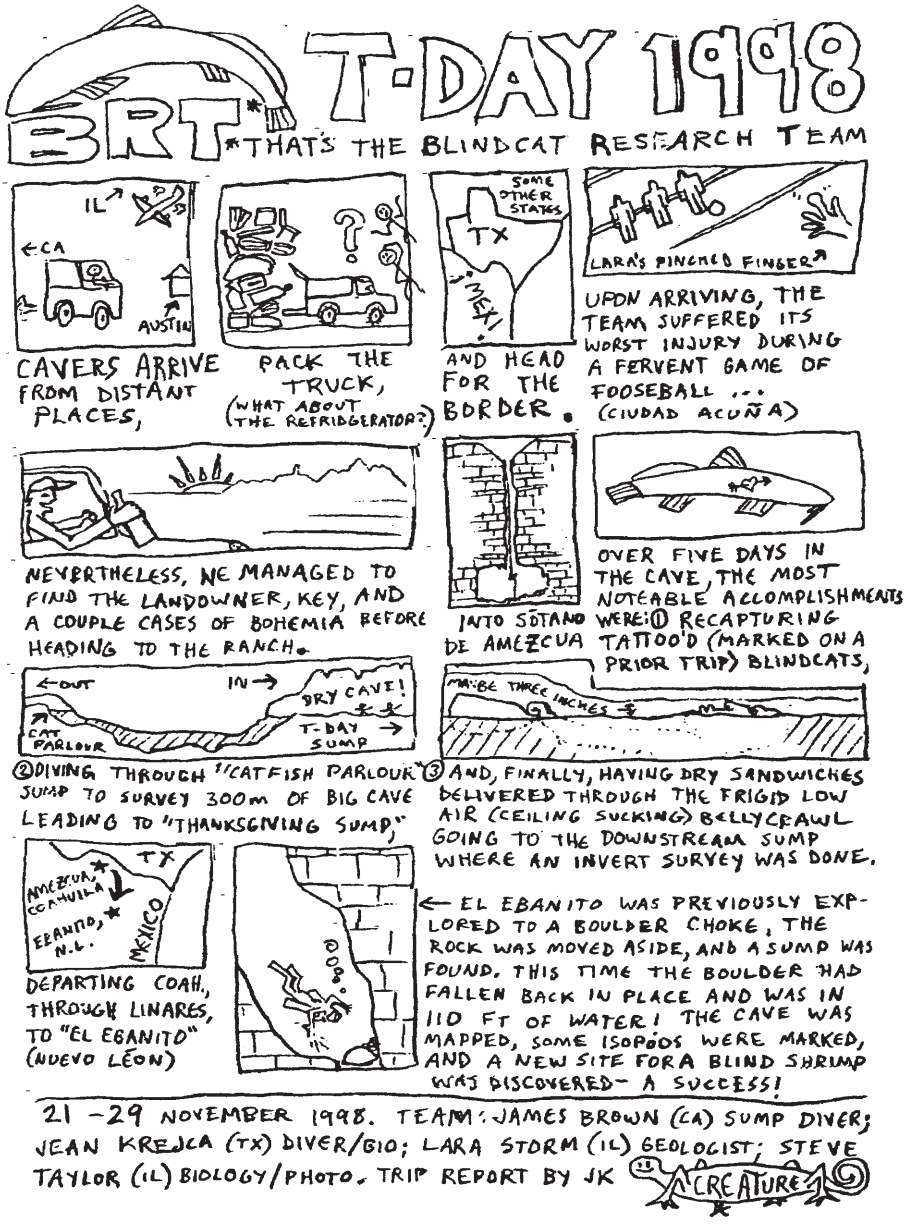
Further across the filed the stream sinks underneath the gaze of the twin towers that gives the Torrecillas doline its name. There it starts out very encouragingly, but slowly the ceiling comes down, the water gets deeper and after 130m we waded into the terminal sump. Fun while it lasted and some wanderings around the area revealed other entrances that will have to wait for another year.

For '97-'98 the participants were: Chris Lloyd, Taco Van Ieperen, Monique Castinguay, Kirk Safford, and Chandra Wong from Canada; Vicente Loreto, Ramón Espinasa, Ruth Diamant, Jazmin Garnelo, Curro, Claudia de Curro, Nabor Castillo, Illinza Castillo, Iztacihuatl Castillo, Illizt Castillo, Misti Castillo, Maria Castillo, Sergio Nuno, Ximena Fernández from Mexico; and one lone Brit, Nick Hawkes.



Área Dos Aguas, Michoacán

Espeleólogos, en su mayoría mexicanos, vistaron el área de Dos Aguas, Michoacán durante las vacaciones de invierno 1996-1997 y 1997-1998. Su principal objetivo consistió en explorar y topografiar la cueva Vinata, visitada en 1985 por espeleólogos norteamericanos pero todavía sin contar con un mapa. Después de realizar la topografía se sabe que por esta cueva, por donde corre un río, tiene una longitud de 4666 metros. Se exploraron otras cuevas en el área incluyendo la Cueva de Vicente, con 95 metros de profundidad; la Cueva de Los Tontos, de 860 metros de largo y la Cueva Año Nuevo con 870 metros de longitud. Las topografías no están orientadas respecto al norte magnético debido a que una compañía minera está también explorando el área.



PROYECTO CHEVE UPDATE

Nancy Pistole and Matt Oliphant

We had a mission: 1997 was the year we were going to find the elusive way though the breakdown at the end of Cheve, and regain the title of Mexico's deepest cave. We had reason to be confident. On the last push trip in 1995, we had crawled into a passage at the end of a newly discovered room in the breakdown, and saw a small squeeze with a big, black, empty space on the other side. Of course this happened on the last day of the trip, and there was no time for further exploration.

HISTORY

First, a brief background of the Proyecto Cheve and the frustrating breakdown. The main cave, Cheve, was discovered in 1986. In the four years following, Cheve was a caver's dream. On every trip, we explored and surveyed kilometers of big passages and deep pits. The cave was making a beeline for the resurgence, 17km away.

Several other entrances were connected, making it a system. In 1991, the system reached a depth of –1,386 meters, the deepest in Mexico. In 1990, we encountered a breakdown choke that filled an enormous passage, almost seven kilometers from the entrance.

Since there were many other leads to check, our efforts were turned elsewhere. After all, who wanted to traverse seven kilometers of big passage just to grovel through tight breakdown? In '91 and '92, the other leads were checked off, one by one. The terminal sump was even pushed, but to no avail.

Finally, the inevitable was accepted: all the air went through the breakdown, and that is where we would have to go to continue towards the resurgence.

In 1993, two week-long underground camps were set, with the specific goal of finding a path through the breakdown. After all, there were several other breakdown chokes in the cave, and we had managed to find a way through those (the longest one requires a 50m crawl). But at the end of the '93 trip, the passage we imagined beyond the breakdown was still unknown. All we had determined was that this breakdown choke was very, very big.

In 1995, the plan was to expend all efforts to push in one direction, taking the path of least resistance. A dedicated group of cavers camped underground for thirteen days. In order to use the camp most efficiently, we used the "hot bed" technique. While the first shift worked on the breakdown, the second shift slept, and every twelve hours we switched.

The chosen path headed up, in an attempt to find a ceiling or a wall to follow. It was grueling work—moving rocks, digging, hammering, and squeezing. By the end, we had penetrated 300m into the breakdown. Along the way, we had found several good-sized rooms, the last one, and biggest, measured 80m by 50m. It was from this room where we saw the blackness past a squeeze.

CHEVE 1997

In early February, the first wave of cavers showed up at the "llano," the meadow just outside the main entrance of Cheve. The cave is located in the Sierra Juarez, about three hours north of Oaxaca City, in the state of Oaxaca, at an elevation of 2700m. The llano is a beautiful place to camp. It is surrounded by a pine forest, and has a waterfall and stream running into the cave.

We use an old logging road to get close to the llano, and this year the road had been improved. With a little more work on our part, we were able to drive to within five minutes of the llano.

In the next six weeks, a total of thirty-one cavers would show up for various lengths of time. We had cavers from the United States, United Kingdom, Mexico, Canada, Germany, and Russia. Even with a promising lead, only a few cavers had returned from the 1995 trip. This was not going to be easy work.

The first week and a half were spent in the usual way—setting up the llano for camping, rigging a tree for vertical practice, rigging the cave, getting ready for underground camps, and getting used to the altitude.

February that year seemed to be wetter than normal—it rained about every third day. We set up a big group tent so we could cook and socialize even in the rain. Another tent was set up for group gear, and then individual tents were scattered all over the llano.

We rigged two trees for vertical practice, complete with knots and rebelays. Most cavers run through the rigging to brush up on vertical skills and to make sure all their equipment is working and adjusted correctly.

Many of us were also learning pick-off techniques—ways of retrieving a caver who gets stuck on a rope. This year we also rigged the

headwall, the big limestone cliff that holds the cave entrance. There is a rebelay at the top, to protect the rope from the lip, and then an 86m free drop. Ascending the rope makes a great workout, and the view at the top is quite a reward.

Because of the high water in the cave during the wet season, we don't leave any of the drops rigged. It usually takes about three killer day trips to get all the ropes in place down through the Turbines. Then the rest of the cave can be rigged on the trips in to the underground camps.

One of our other goals this year, besides the breakdown push, was to replace many of the well-worn ropes and re-rig the drops using stainless steel bolts and hangers. When the entrance drops had been rigged years before, nobody imagined what a thoroughfare the main route would become.

We wanted to rig the drops to make it as easy as possible to safely negotiate the cave while carrying heavy camp packs. We used a gasoline-powered hammer drill to install $^3/_8$-inch stainless steel bolts.

With a generous sponsorship from Cancord, we were able to replace the ropes on the drops all the way to Camp II. About half of the ropes were replaced with nylon, the standard material in use now for most caving rope.

On some of the wet drops we used polyester rope. This polyester rope has much less stretch, even when the rope is wet. It was a pleasant surprise to be able to take one step on a rope under a stream of water, and already be off the ground. The drawback is that polyester rope has to be rigged extra carefully, since there is almost no stretch to absorb a sudden shock load.

By February 12, the first group was ready to go to Camp II. Mike Frazier, Peter and Alec Hartley, and Todd Warren loaded up their camp duffs and headed in. Their job was to set up Camp II so it could be used as an intermediate camp on the way to Camp III at the end of the cave.

They didn't know what they were going to find. A group of Polish cavers had been in the cave the year before, and some of our ropes had been stolen. Several years earlier another group of Polish cavers had used the Camp II spot and left trash everywhere. They were prepared to do a big clean-up if necessary.

The group returned the next day, and said it didn't look like anyone had been to the camp since we left it in '95. Camp II was now stocked and ready to go. It was time to send the first breakdown pushers on to Camp III.

CAMP III

Two days later, Lance Mattson and Mike were packed and eager to get started. They planned to spend the first night at Camp II, and then go on to Camp III. Because there were only five sleeping bags at Camp II, cavers would have to go in groups of five or less. The next day, Peter, Alec, Todd, Bob Riley, and Daniel Laos followed them in.

Mike and Lance set up Camp III. When the rest of the group arrived, they realized there were only six sleeping bags for the seven of them. Daniel didn't want to share a bag with anyone, so he spent an uncomfortable night, huddled only in his long underwear (at Camp III it is 13°C).

The next day, after two years of anticipation, the group eagerly headed for the lead. After a lot of hammering on a rocky protrusion, they finally got through the squeeze. Just as hoped, the blackness was a gigantic room, 120m by 90m. Even more exciting was that the 40m high ceiling was solid.

Maybe they finally reached the top of the breakdown and could find the continuing passage on the other side! They made one lap around the new room, but didn't see any obvious leads. The room contained some of the prettiest formations in the cave.

When they got back to Camp III, Daniel was anxious to exit the cave. Since Bob, Mike, and Todd did not have much vacation time left, they all decided to exit the next day. When they got to the surface, we were thrilled to hear the news. The next group started preparing for their chance to explore further.

THE RESCUE

The same night the first group headed into Camp III, Carl Bern and Steve Wells went into the entrance section of the cave to find a passage called Santa's Workshop. On the first trips into the cave in the '80s, quite a bit of passage was explored near the entrance. Santa's Workshop was one of the few that was heavily decorated with formations.

The area is very mazy, and no one had ever gone back, since that section did not lead to the rest of the cave. Carl and Steve were trying to get out of the bad weather on the surface, and thought it would be a good warm-up cave trip to find the fabled passage.

They left in the afternoon, and were not expected out until late in the evening. At 9:30 PM, Steve crawled up to our tent. He said that he and Carl had been scrambling over some big boulders that broke loose. He fell and sprained his ankle, but Carl was pinned by a boulder and was still trapped inside the cave.

Matt and Page Ashwell went directly to Carl. They got to him in less than half an hour, and were relieved to find him in good spirits. Miraculously, the enormous boulder that trapped him had a groove in it, and Carl's leg was in the groove. Matt and Page were able to budge the boulder just enough to restore full blood circulation in Carl's leg.

Meanwhile, a bigger crew on the surface gathered more gear—a sleeping bag, food, scissors jack, rigging gear, etc. Joe Ivy, Becky Jones, John "Rocco" Stembel, and Nancy went to the scene loaded with equipment.

The entire area is full of loose boulders and exposed climbs, so ropes were rigged along the way so no one else would get hurt. After examining the position of the rock, we decided that it was too risky to move it, so we stabilized it with the jack and some rope.

Then we took turns hammering off the parts of the rock that were

preventing Carl from extracting his leg. In about an hour, his leg was free. Carl's carbide generator was a mangled mess, and the steel shank in his boot had almost been folded in half, but his leg seemed to be okay. We were prepared to help Carl out of the cave, even carry him if necessary, but when he found he could walk without assistance, he headed slowly for the entrance.

On the surface, Susan Sanders had prepared a big pot of boiling water, so we were all treated to soup and hot chocolate. We examined Steve and Carl more carefully. Steve's ankle was badly bruised and swollen, but we couldn't tell if it was fractured. Carl had a nasty cut on his toe and a lot of skin abrasion. We wrapped and bandaged them up, and then tucked them in their tents with pee bottles nearby so they wouldn't have to get up again during the night.

When the local clinic opened, Carl and Steve went to see the doctor. He told Steve to stay off his ankle for a week, and he didn't think anything was broken (there was no x-ray machine).

Steve did not have the patience to stay off his ankle for a week, and two months later he found out it was broken (ouch!). Carl was given some antibiotics so none of the cuts would become infected, and was also told to take it easy. His cuts healed without any problems, but his leg was sore for a while.

THE SECOND PUSH

On February 21, Matt, Page, and Glenn Randall headed in to Camp III, with an overnight stop at Camp II. The next day, Don Broussard, José Soriano, and Javier Vargas went to Camp II. Lance, Steve, and Rob Evans left the same day, but went directly to Camp III to avoid a sleeping bag shortage. It was a long trip, and painful for Steve because of his ankle.

When we all arrived at Camp III, we started shifts for hot bedding. Our goals were to survey everything that had been explored up to that point, and to find a lead that continued out of the new room, which we were calling the, "Big better cave passages."

Even though Harbinger Hall is not that far from Camp III in distance, there is a lot of hideous crawling and squeezing, so it takes about three hours to get there from camp.

Soriano and Javier had planned on visiting Wet Dreams, the section that leads to the terminal sump, so they didn't go to Harbinger Hall at all.

The rest of us spent two days searching the new room for leads, but with no luck. The air definitely flows into the room, but about half of the room is covered with a scree floor, and we are afraid the air is filtering out through the floor.

After three days, Rob, Glenn, and Page had had enough, and they left for the surface. Don, Matt, and Lance took one more long trip to Harbinger Hall and finished the survey. The next day Don and Steve headed out. Matt and Lance waited twelve hours to prevent a pile-up on the drops, then they also exited the cave.

THE PHONE LINE

One of the projects we had on this trip was to lay a phone line into the cave. Joe and Becky borrowed some military field phones and acquired kilometers of indestructible stainless steel communications wire.

Joe was confident that we could lay the wire all the way to Camp III, but other people were less optimistic. However, just about everyone participated on at least one of the many trips into the cave to lay the wire. After four weeks of diligent work, over 3.5km of com wire was laid to Camp II.

The main idea was to have a line already in place in case anyone got hurt and a rescue was needed. Because of the durability of the wire, we should be able to use it on future trips.

Luckily, we did not need it on this trip for a rescue, but used it instead to inform the surface of where the cavers were in the cave. The novelty of the phone never wore off, and we came up with endless jokes when we answered the phone. We used everything from "Domino's Pizza" to "Your party is unable to come to the phone. Please press one if you would like..."

THE PHOTO TRIP

It was frustrating to find such a beautiful, big room, and yet not have it continue. In the last two weeks of the trip, Ken Davis, Peter Haberland, and Ilia Zharkov arrived. They were enthusiastic to see Harbinger Hall and take photos.

On March 2, the three of them, along with Nancy, left for Camp II. Ken had taken a lot of photos in '95, and he had certain areas in mind to take photos on the way to Camp III. Our other goals for the trip were to take another look at Harbinger Hall for leads, and to pack up the camps.

Because of the photos, it took two long days to get to Camp III. We had planned on spending three nights at Camp III, so we would have two days to explore Harbinger Hall. The hassle of dragging all the camera gear through the breakdown changed our minds, so we decided to make only one long trip to the room. We were also at a disadvantage because none of us had been to the room before, so we had some route finding to do.

When we got to Harbinger Hall, we made the most of it. We poked into every nook and cranny we could find around the perimeter and took photos until we ran out of flashbulbs. The conclusion was the same—it looked as if the air was filtering through the floor. Twenty-two hours later we stumbled back to Camp III.

We had a good night's sleep, and then packed up Camp III. We were already running behind schedule, so we were not going to dilly-dally on the trip back to Camp II.

The first time we saw the stream on the way out, we were in for a big surprise. The stream level was over half a meter higher than we had ever seen it. It had already been high on the way in, and we had several water sections to go through. We decided to continue, assured that if we couldn't get through a passage, we had camping gear with us.

We did manage to get to Camp II, but it was not an easy trip. Small trickles of water had turned into

SISTEMA CHEVE

Municipio de
CONCEPCION PAPALO

OAXACA, MEXICO

Total surveyed length: 24.3 kilometers
Depth : -1386 meters

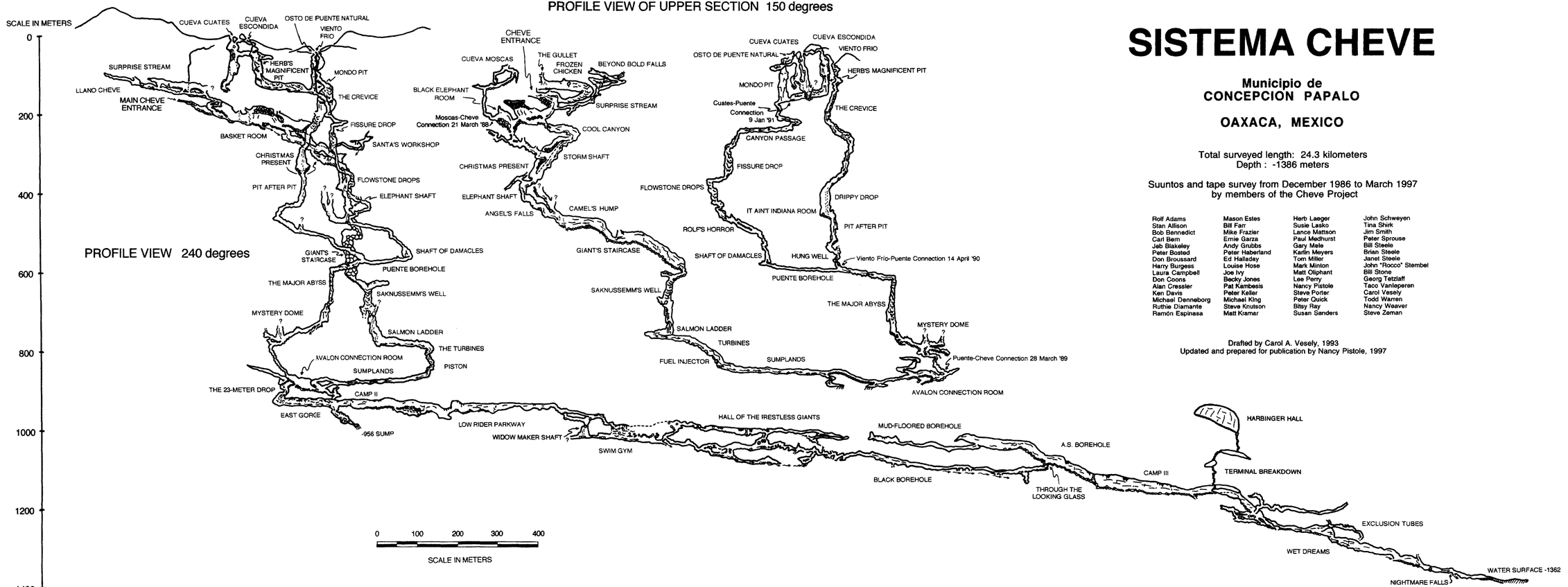
Suuntos and tape survey from December 1986 to March 1997
by members of the Cheve Project

Rolf Adams	Mason Estes	Herb Laeger	John Schweyen
Stan Allison	Bill Farr	Susie Lasko	Tina Shirk
Bob Bennedict	Mike Frazier	Lance Mattson	Jim Smith
Carl Bern	Ernie Garza	Paul Medhurst	Peter Sprouse
Jeb Blakeley	Andy Grubbs	Gary Mele	Bill Steele
Peter Bosted	Peter Haberland	Karlin Meyers	Brian Steele
Don Broussard	Ed Halladay	Tom Miller	Janet Steele
Harry Burgess	Louise Hose	Mark Minton	John "Rocco" Stembel
Laura Campbell	Joe Ivy	Matt Oliphant	Bill Stone
Don Coons	Becky Jones	Lee Perry	Georg Tetzlaff
Alan Cressler	Pat Kambesis	Nancy Pistole	Taco Vanleperen
Ken Davis	Peter Keller	Steve Porter	Carol Vesely
Michael Denneborg	Michael King	Peter Quick	Todd Warren
Ruthie Diamante	Steve Knutson	Bitsy Ray	Nancy Weaver
Ramón Espinasa	Matt Kramar	Susan Sanders	Steve Zeman

Drafted by Carol A. Vesely, 1993
Updated and prepared for publication by Nancy Pistole, 1997

PROFILE VIEW OF UPPER SECTION 150 degrees

PROFILE VIEW 240 degrees



Sumidero
Aguacate
Chapulapa, Oaxaca, Mexico

Tape and Compass Survey by
Proyecto Cheve in March 1994

Total mapped length: 1053.8 m **depth: -174m**

Survey Team:	Peter Hartley
Harry Burgess	Joe Ivy
Rich Close	Doug Pflugh
Chris Gibson	Carol Vesely
Peter Haberland	Chris Welsh

Cartography:
Peter Haberland

map measurements in meters
0 5 10 15 20 30 40 50 meter

PLAN

North (magnetic)

PROFILE
west <—> east

Vertical Scale for Profile

Legend

ceiling height	bed rock	sand
abrupt change of ceiling height: low ◁ high	breakdown	mud
dome	narrow joint	flowing stream
ceiling channel	sloping floor	pool
abrupt change of floor: rise ▷ drop	stalactites	siphon
pit	soda straws	unexplored lead

Tree Entrance (dry)
Stream Entrance (wet)
natural anchor on root, use 30m rope.
12m dome to boulder & flowstone occlusion
tight squeeze
connecting dome-pit between upper and lower level
siphon insurgences
siphon resurgence
waterfall bypass
dry bypass
3 meter fall
5 meter fall
plan ref. FF'
Terminal Siphon
ref.: AA'
ref.: BB'
ref.: CC'
ref.: DD'
ref.: EE'

raging torrents in some places. We couldn't resist taking "before and after" photos of some of the stream passage that we had shot on the way in.

When we got to Camp II, we called the surface. Our originally scheduled five-day trip had turned into seven days, and Ken had a flight to catch.

We were hoping that we could leave most of our stuff at Camp II and head out, and then another group could come in and pick up the rest of Camp II, but no such luck. It had been raining heavily on the surface, and many people had already left. We would have to break down Camp II and carry everything out ourselves.

We decided to first get some sleep and hope the water level would recede. After we woke up, we packed up Camp II and headed out. Thanks to the phone, we were able to make elaborate plans with the surface.

We carried the Camp II phone with us, so when we got to the Turbines, we called the surface and told them where we were. Matt met us at the bottom of Saknussemm's Well, and took Ken's pack. The two of them rushed out of the cave, so Ken could pack up his tent and leave for his flight. Ilia was right behind them.

Peter and Nancy didn't want to miss a farewell dinner for Ken, so we dropped our packs in the Giant's Staircase and rushed out, too. We all had a good dinner in a restaurant, then sent Ken on his way.

PALOMITAS

While some cavers were busy at the underground camps, several trips went into Cueva Palomitas. This cave was discovered in 1991, and is located above the Cheve headwall. The cave has a good flow of cold air, so we assumed it would connect into the main cave fairly quickly.

However, after 900 meters of passage and 280 meters in depth, it actually started heading away from the main cave, with no sign of connecting, yet the amount of air was indicative of a big cave.

Most of the cave is easily negotiable, except for one part after the -60m entrance pitch. This passage is aptly called the Gnarly Passage, and weeds out all but the most determined explorers. It is a very sinuous rift, with popcorn covered walls. In 1995, a series of trips went into the cave, but all ended because of some kind of misfortune, and very little survey was done.

Rocco, Glenn, and Paul Medhurst made the first foray into the cave in '97. They thought it would be a good shakedown trip before going in to an underground camp. They got to the stream passage at the bottom of the "100-Meter Pit" (which is really 90 meters), and found the last survey station.

They continued on and re-found the next deep pit (found but not descended by Charley Savvas in 1995), which looked equally as deep. It took quite an effort to rig it safely, but then they ran out of rope near the bottom. They returned to the llano twenty-four hours later, muddy and exhausted, but full of stories of going cave.

Rob and David Quillen were the next team in. They got a late start, but managed to re-rig the new pit with enough rope to get to the bottom. After they rigged the pit, they came back out.

It took almost a week to get a group together for another push. Paul, Rocco, David, and Angela Morgan loaded themselves down with rope and headed in. After the last big pit, they found more passage, and more pits, and it kept going. They finally ran out of rope and couldn't continue.

They had planned on surveying the new passage, but being cold and tired, they headed out. Another twenty-four hour trip, with more stories of going passage and lots of air.

Rocco estimated the lengths and drops of the route they followed, and it looks like Palomitas will connect with Cheve much lower than we originally thought. Perhaps it will connect around Saknussemm's Well or the Salmon Ladder.

Near the end of the expedition, no one else was motivated to go on a long, exhausting cave trip to survey. David and Angela made a gallant trip in to shuttle rope through the Gnarly Passage (by far the worst part of the ordeal) so that it would be ready for the next big trip. We left it as a good, going lead with a big question mark.

THE RESURGENCE

The first exploration of the resurgence to the Cheve system occurred before the main cave was even discovered. Bill Stone led a large expedition to dive the Peña Colorada resurgence in 1984, located on the north side of the Río Santo Domingo Canyon.

The group was looking for a connection into the Huautla system. During a recon trip in the canyon, several divers dove in a big, cold resurgence on the south side of the canyon, which they called the Western Resurgence.

They also checked out some dry leads close by. The divers surveyed 150m of underwater passage, and came up into air-filled rooms several times. Although the leads looked promising, the resurgence was not the one the group was looking for because it was located on the "wrong" side of the canyon, so exploration was not continued.

After Cueva Cheve was discovered, the search for the Cheve resurgence started. The Western Resurgence, known locally as the Río Frío, seemed to be the likely resurgence: cold water coming out of a cave directly in line with the northward trend of the Cheve system. The distance between the Cueva Cheve entrance and the Río Frío is 17km.

In the Spring of 1989, dye bugs were placed in Río Frío and several other resurgences. During the expedition, optical brightener was released into the stream in Cueva Cheve. The retrieved bugs tested negative, which was disappointing but not conclusive.

During the bug retrieval trips, exploration was pursued in the dry caves around the Río Frío resurgence. Three entrances were documented that had walking-sized passage and blowing air.

In the most promising of these caves, Cueva de la Mano, almost

350m were surveyed, with many leads remaining. Although the Río Frío had not been confirmed as the Cheve resurgence, it was obvious that the area had a lot of potential for new caves.

THE FIRST BIG TRIP

In February and March of 1990, eleven cavers from the United States and Canada spent eleven days pushing the known caves by Río Frío and looking for other entrances.

The hike into the canyon is over six kilometers with more than a 1200-meter elevation loss, so burros were arranged to carry the group gear and food, while we carried all our personal gear. Camp was set up on the bank of the Río Santo Domingo, close to the Río Frío. All three cave entrances were within five minutes walking distance.

The caving routine was very regular. Three or four caving and ridgewalking groups explored and surveyed during the day, then we shared our discoveries in the evening during dinner, and plans were made for the next day.

Cueva de la Mano was the biggest of the three caves found. By the end of the trip, we had surveyed over six kilometers of passage in Mano, with a total penetration into the mountain toward Cheve of just over one kilometer.

One of the other entrances, named Cueva del Mono for the monkey face carved into a column in the entrance, connected in to Mano. The third cave, Cueva Mariposa, had over 650 meters of passage before ending in a sump.

Mano and Mariposa were similar in nature: both contained mazy passages of different characters—some muddy, some clean-washed—and both caves had many formations. The average temperature of the caves was a pleasant 16°C. When a sump was reached, checking for a passage going up the predominant dip and to the southeast was usually the key for finding a bypass.

Ridgewalking was the most difficult activity of all. The area is tropical at elevation of only 300 meters. There are many types of cacti and other spine covered flora, as well as snakes and scorpions.

We found several other caves, the biggest being Buena Vista. The two entrances to Buena Vista are 60-meters high on a cliff face, with spectacular views looking both up and down the Río Santo Domingo Canyon.

There was a lot of evidence of previous use by the people in the area—stone barriers, abandoned tools, and markings on walls—but no signs of recent use. The cave is all walking passage, with big rimstone dams and flowstone draperies.

Another major find was Amontilado, but we discovered it near the end of the trip. There was not enough time to survey it. Most of the other caves that we found did not have blowing air, and therefore were not considered very important.

During the trip, Jim Smith released fluorescein into the stream in Cueva Cheve. After eight days, the fluorescein was unmistakably detected at the Río Frío resurgence, confirming that it was connected to Cheve. The elevation difference between the highest Sistema Cheve entrance and the resurgence is over 2500 meters.

PERMISSION DENIED

Another trip was planned for Christmas of 1990, but when we arrived, the town that controls the access to the resurgence area, Santa Ana Cuauhtémoc, would not grant permission for anyone to go down into the canyon. After one and a half weeks of run around (more letters of permission, visits from officials from Teotitlán, etc.), we finally ran out of time and did not get into the canyon.

In March 1991, a small group of cavers went to Santa Ana to talk to the presidente and to make friends with the town. The townspeople gave the impression that the cavers were welcome, but the presidente still denied access to the canyon. In 1992, two more cavers returned to Santa Ana with higher level letters of permission, but the presidente wasn't there, so again no one went into the canyon.

In January 1993, Louise Hose and a few cavers were in the Cheve area recording the locations of cave entrances with two GPS units. A new presidente was in office, so hope was renewed for permission to go into the canyon. With help from a government official from Oaxaca, two cavers were granted permission for a day hike into the canyon, and arrangements were made for a bigger group later in the season.

A month later, five cavers from the US and two Mexican members of the Cruz Roja of Oaxaca spent five days at the resurgence. Most of the exploration took place in Amontilado, and 916 meters of passage were surveyed.

GPS readings were taken for three days to get an accurate position to tie in the cave entrances. There weren't enough people nor enough time to do extensive ridgewalking, so most of the time was spent cleaning up and adding to the surveys done on previous trips.

On the last caving day, two people went to one of the far leads in Mano to check the sumps. While they were there, they noticed a strong breeze coming from a small fissure. With the help of a hammer, they were able to squeeze through the fissure, and found about 200 meters of passage and a small stream. Due to lack of time and survey equipment, they had to turn around. This was the first running water found in any of the resurgence caves so far.

THE SECOND BIG TRIP

After our successful trip in 1993, we planned another big trip for April 1994. Sixteen cavers showed up in Santa Ana. The townspeople were friendly, and we had no trouble getting permission and arranging mules and horses to carry equipment and supplies.

We spent eleven days camped by the Río Santo Domingo, ridgewalking and exploring caves every day. The first lead to be checked was the one from the previous year—the one with running water. Unfortunately, it quickly narrowed into a tight squeeze and was

impassable.

According to the data, Mano and Amontilado were very close. When we were exploring Mano, we found that if a passage ended in a sump, it could usually be bypassed by backtracking a bit, then going updip.

Since Amontilado was on the updip side, we were confident we could find a connection. Trip after trip into both caves did not produce a route between them. By the end of the trip, almost two kilometers were surveyed in Mano, and another 120 meters in Amontilado, but no major leads were found.

We checked most of the area for new caves in 1990, but now we wanted to make sure we hadn't missed anything. With a set of walkie-talkies, two groups simultaneously hiked on opposite sides of the canyon. It was easier to see cave entrances from a distant vantage point, and then one group could direct the other group to the entrance.

A new cave called Viento Cantando was reached this way. The entrance had been spotted in '90, but it was on a cliff face. With the radios, we knew where to rig the rope above the cave, and then how far to rappel.

Viento Cantando turned out to be rather short, only 400m long, but very pretty. The entrance section has some potsherds and drawings, and then a tight squeeze leading to a big passage with some very pretty columns and decorations. The stagnant air convinced us the cave did not connect into the resurgence system.

However, at the end of a long crawlway, we found a small room, and at the back of the room, we could hear wind blowing. It was coming from a small flowstone crack. We couldn't feel it, but it was definitely air, so we named the cave "Singing Wind."

At the same time we were camped in the canyon, Bill Stone and his crew were camped downstream diving in the Huautla resurgence. Since the two camps were less than a kilometer apart, we visited each other several times.

Bill Farr borrowed some of the Huautla Project equipment, and made a series of dives in the Cheve resurgence. The water that emerges from the cliff face actually comes from deep down. The pools of water that are exposed in the caves have no current—they are overflow pools. By the end of the trip, Bill had laid more than 500m of dive line. On the last dive, he found the strong current again in a nice underwater borehole.

MORE UNDERWATER EXPLORATION

Bill Stone and a small group of cave divers were in the canyon in January 1997, doing some reconnaissance on some other springs. When their leads petered out, they returned to the Cheve resurgence.

First, they pushed the end of Bill Farr's lead another 300m. They found an airbell, and were disappointed to also find a pink survey flag. After studying the map of Mano, they concentrated their efforts on the southernmost sump in the cave.

They didn't have enough diveline to push very far, so they had to retrieve diveline from some of the springs they dove earlier. They extended the southernmost sump 351 meters. Exploration ended (due to air limits) in a 12m by 10m tunnel with very clear visibility, at a water depth of -33 meters.

THE MIDDLE KARST

Soon after Cheve was discovered, and even before it was confirmed that the resurgence really did belong to the Cheve system, cavers started looking at the "Middle Karst." This 60km^2 area extends from the edge of the highland plateau just north of the main cave entrance to Santa Ana.

Because there is a lot more water coming out of the resurgence than going into the higher entrances of the cave, it seems logical to assume the system continues to collect drainage along its route. We hoped that we could find other entrances into the system, and the Middle Karst was the place to look.

Small recon trips took place in 1988, '89, and '90. A number of caves were found, but most were small, tight, and wet, and soon became impassable. Since there was so much to do in the main cave at this time, not much effort was put into systematically exploring the area.

In 1992, a local hunter showed a sinkhole to a small group of cavers. He said that steam rose from the sink on cold mornings. After a lot of digging, they broke into the top of a dome that had good airflow. They called the cave Palomora, named after a nearby ranch.

More exploration revealed a tight, canyon stream passage and several short pits. Two hundred fifty meters of passage were mapped, to a depth of -142 meters. The cavers were stopped by a narrow bedrock squeeze, but the cave headed directly to the projected path of the Cheve system.

THE 1993 TRIP

Six cavers set up camp in the Middle Karst for two weeks. Their goals included pushing some leads from earlier recon trips, including Palomora, and to systematically look for new cave entrances.

Due to lack of proper permission for certain areas, they could not explore Palomora. Instead, they pursued a lead that was found on the '89 trip. The notes said the cave ended in a near-sump, which turned out to be a puddle, so they called the cave Charco ("puddle" in Spanish).

It is obvious that the cave drains a fair amount of water, and there is good airflow, but the passage alternates between tight, wet crawls and nice-sized pits. At about -200 meters, there is a big 33-meter pit. They were hoping that this indicated the cave would open up, and would get easier. No such luck. At the bottom of the pit the passage gets even smaller and requires a belly crawl through a stream. This is where the survey ended for the year. The cave was 735 meters long and 269 meters deep.

Ridgewalking uncovered a number of new entrances, but most of them had little airflow and quickly ended. The amount of area to explore is enormous, and the group

had barely scratched the surface.

THE 1994 TRIP

It was time to do some serious looking in the Middle Karst. We were frustrated by the breakdown choke in the main cave, so we had even more vivid dreams of finding the magic tunnel in the Middle Karst that would bypass the breakdown and lead us deeper into the system.

Twenty-five cavers camped in an old schoolhouse for two weeks in the small village of La Hierbabuena. Every day for the first week, groups went out completely scouting the area around the town. Since most of the area is farmed, our best leads came from the local farmers.

They showed us many obscure pits and cave entrances, although few of them had any airflow. During the second week, the weather turned bad. It was too hard to ridgewalk in near zero visibility, so more effort was put into the going caves.

One cave that seemed promising, called Aguacate, had been noted by cavers on previous trips to the area. The Aguacate stream flows into a pit, and there is evidence that the cave takes on large amounts of water during the wet season.

There is a spring about 500 meters down the valley with a comparable amount of water flow. It seemed reasonable to assume the two were connected, but we wanted to confirm there were no other leads in the cave.

For more than a week cavers explored and surveyed farther into the cave, and found some nice-sized passage (10 to 12m wide in places) and big pits. But after one kilometer of survey and -174 meter depth, the stream the cavers were following went down into a narrow, muddy, foamy sump. There were no other unchecked leads.

The intriguing part is that the cave trended for 400 meters in a west-northwest direction—away from the spring and in the direction of the projected line of the Cheve system.

Charco was high on the list of caves to be pushed. The first group in planned to survey through the belly-crawl stream passage and continue exploring. The crawl was as hideous as it was described, but finally opened up. The passage continued in the same fashion as before: tight, miserable squeezes opening up to fair-sized downclimbs.

It was hard to persuade a second survey team to continue, because the word got out on the true nature of the cave. The second team found more of the same, and finally turned around at a vertical flowstone crevice that would allow only the smallest of cavers to pass.

Several hundred meters were surveyed, bring the total length to 940m and the final depth to -316m. Even with the nice breeze and water flow, we estimate that we will need to go to at least -500m in that area to reach the main system. Another 200m depth in typical Charco style could only be pushed by the most masochistic cavers.

The other lead to check was Palomora. The tight passage that had stopped the previous explorers was widened, but it needs more work before a caver will be able to get through. The cave still has enticing airflow.

Although our dream cave was not found near La Hierbabuena, there are still much more of the Middle Karst to check. At least we can cross one area off the map for potential leads.

ACKNOWLEDGMENTS

Proyecto Cheve has received generous long-term sponsorship and support from the Richmond Area Speleological Society (RASS), the Dogwood City Grotto, and the NSS International Expedition Support Fund.

On the most recent trip we received much-needed help from Cancord Rope Inc., Gonzo Guano Gear, and the Huntsville Grotto.

We would like to thank the townspeople of Concepción Pápalo, San Juan Bautista Cuicatlán, La Hierbabuena, and San Miguel Santa Flor for their kind cooperation.

We would also like to thank Lic. Diódoro Carrasco Altamirano (Governor of Oaxaca), Dr. Germán Cruz Martínez (Director of Civil Protection), and the Cruz Roja of Oaxaca for their interest and assistance in helping us work towards our goals.

Proyecto Cheve, Oaxaca

En 1997 se realizó otra expedición a la cueva Cheve, en el estado de Oaxaca. Se rearmó la cueva usando nuevos anclajes (bolts) y cuerda de nylon y poliéster. Se preparó también el Campamento II como un lugar de descanso al entrar y salir de la cueva desde el Campamento III. Ya instalados en el Campamento III los espeleólogos se dedicaron a buscar la continuación al "agujero oscuro" dentro del Derrumbe Final. Esta posible continuación a la cueva fue encontrada en el viaje anterior al área, en 1995. Este paso a la oscuridad sigue hacia un gran salón, de 90 por 120 metros y con un techo de roca sólida a 40 metros de altura, sin derrumbe. Desgraciadamente no se encontraron posibles continuaciones a este salón. Se retrasó el viaje para fotografiar el Campamento III y el nuevo salón cuando al regreso aumentó el nivel del agua. Mientras tanto, un espeleólogo se fracturó un tobillo y otro más estuvo brevemente atrapado en el derrumbe por un bloque flojo en un área compleja cercana a la entrada. Este último fue rescatado con heridas menores. Se exploró a partir de la superficie la Cueva Palomitas sin tener éxito en conectarla con Cheve. En el área de la resurgencia, a lo largo del Río Santo Domingo, se topografiaron poco más de dos kilómetros de pasaje fósil en la Cueva de La Mano. De esta misma cueva se colocaron más de 800 metros de línea de buceo en la resurgencia activa. Se buscaron también, sin éxito, otras posibles entradas al sistema Cheve en el karst localizado entre la cueva y su resurgencia. De estas entradas, Aguacate fué la más profunda contando con 174 metros. En Charco se avanzó hasta llegar a una profundidad de 316 metros encontrando todavía un buen flujo de aire pero un paso muy pequeño y difícil.

The Discovery and Exploration of Nita Nido and Nita Ntau, Municipio de Huautla de Jimenez, Oaxaca

James H. Smith Jr.

During the two-month 1985 Expedition to Sótano San Agustín a considerable effort was put forth to find new cave entrances that may be tributary to the then 33.7 kilometer long and 1252 meter deep Sistema Huautla.

Ridgewalking was concentrated on the ridge between the communities of San Agustín / San Andreas and Plan Arena / Plan Carlota in the vicinity of Nuevo Progresso. Ridgewalking in the same area on earlier expeditions had yielded the discovery of the 848-meter deep Sótano de Agua de Carrizo and Sótano Molino de Carne.

The community of Nuevo Progesso with its numerous dolinas is situated over many subterranean canyons and wet domes of La Grieta, a 760-meter deep cave. If luck was with the expedition, a higher entrance to La Grieta might be found.

On April 13, 1985, Frank Bogle, Jim Youmans, Richard Schreiber, Jeb Blakeley, and Ed Holladay hiked over the ridge that separated the San Agustín Dolina from the La Grieta Dolina into the community of Nuevo Progresso. The 1:50000 scale Huautla topographic map indicated that there were large dolinas near the village. The dolinas were especially promising since they are located over the top of La Grieta's lower reccesses. The exploration of La Grieta in 1977 identified major infeeding streams from domes like the Doo Da Dome at -500 meters.

As luck would have it, the team discovered a walk-in entrance on the side of a large dolina in Nuevo Progresso. The cave was named Nita Nido for a Nido can (dried powdered milk) found in the entrance. The team explore the cave as far as the first drop that looked to be 4 meters deep. The strong wind in the entrance had all the signs of an entrance into Sistema Huautla.

The team of Frank, Jim, and Richard returned with rope on April 23rd. The team explored eight short drops of 4, 3, 4, 5, 4, 6, 4, and 6 meters. They scooped about half a kilometer of steeply descending stream passage and stopped at the top of a deep shaft with air flow.

Bogle recalled, that the entrance section was good size passage for it is as high as it was wide. The rest of the passage was of comfortable size walking passage to the top of the deep shaft. The shaft appeared to be very large in diameter and beams from their headlamps could barely spot the opposite wall.

The tie-off for the eighth drop had a rig point 15m from the lip. Near the lip was an intricate formation which looked like an upside down Elk Antler. It was accidentally and regretfully destroyed by the side motion of the rope stretching out when the drop was descended. The formation was the only one seen in the cave. The trip lasted eight hours.

The next day, Frank, Jim, and Richard did an overland survey to Nita Nido from Molino de Carne. Molina de Carne has a permenant surface survey tie-in station.

On April 25th, Frank, Jim, and Richard began surveying Nita Nido. The team surveyed 63 stations in 526 meters of traverse to the top of the big shaft which they named the TAG Shaft. They had brought in push ropes to drop the big shaft. They rigged a 22m drop to a ledge. From the ledge they descended 64 meters, but the end of the rope swung free. The caving trip lasted eleven hours.

On April 27th, Frank, Jim, and Richard finished the survey and exploration Nita Nido on another eleven hour trip. The irregularly shaped TAG Shaft was finally bottomed.

The upper portion was slopping and against the wall with blades of limestone projecting from the walls. The TAG Shaft was a large oval pit, 50 meters in diameter.

Bogle remembered, "While I was climbing up the TAG Shaft my foot struck a blade that appeared to be solid. A body size chunk rock began slowly to peal off the wall. I held it in place for a few seconds while I screamed, 'ROCK!' at Youmans and Schreiber who ran for cover.

"I finally had to let the rock go. I thought for sure that Youmans or Schreiber would be flat rocked or the rope would be cut. Thank goodness they were okay and the rope was not cut or damaged."

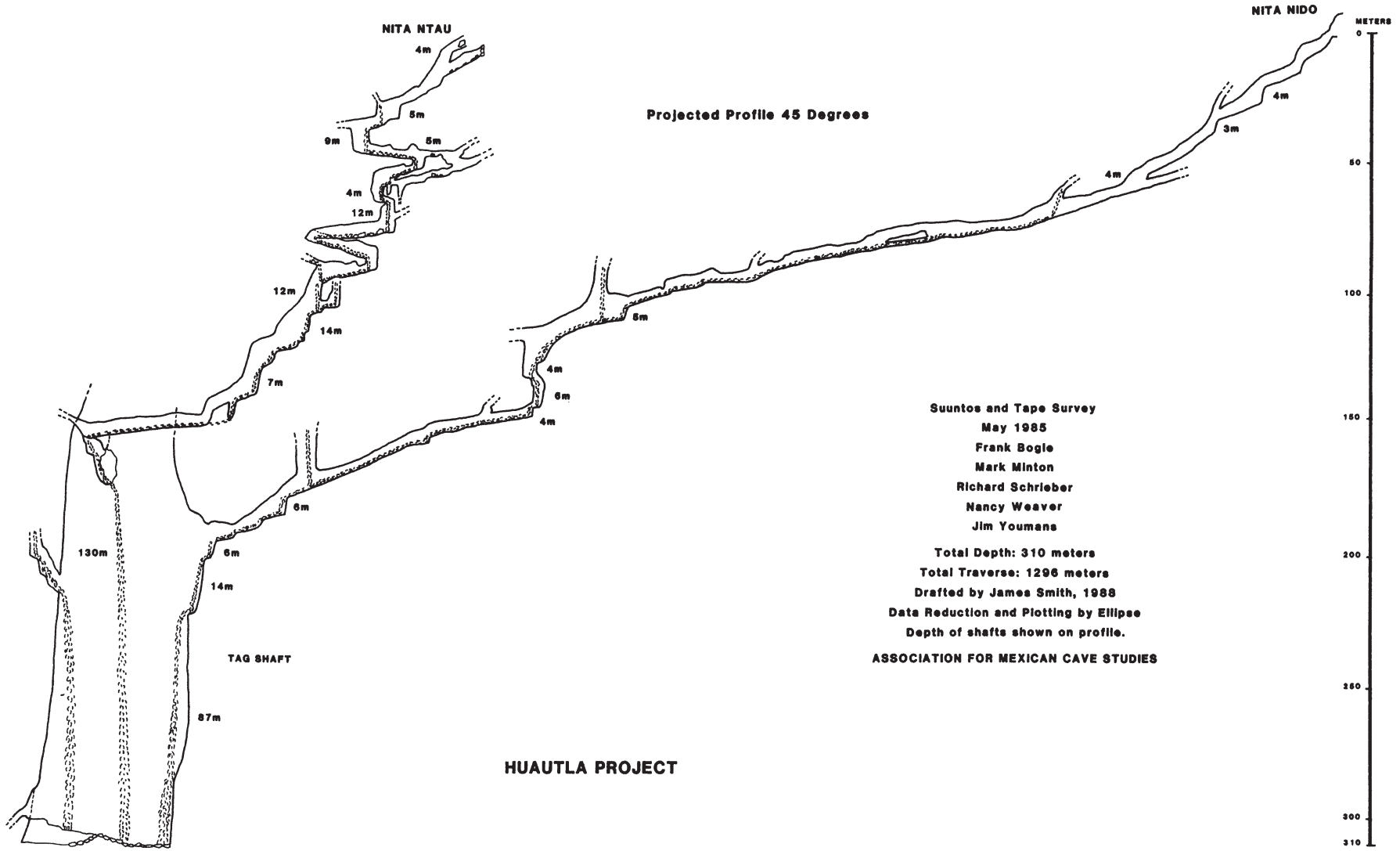
They surveyed twelve stations to the bottom of the TAG Shaft. The bottom of the TAG Shaft had a flat floor and the cave stream disappeared down a horizontal fissure too tight to follow.

Minton remembered at the bottom of the pit the cave ended in a tall narrow crack only centimeters wide. It looked to be this size for 3 to 6 meters before it took a turn. The crack appeared to be developed along a fault. There was good air blowing from the crack. It would be a large mining job to extend the

NITA NIDO & NITA NTAU

Nuevo Progreso, Oaxaca, Mexico

Municipio de Huautla de Jimenez



HUAUTLA PROJECT

cave deeper. The total surveyed length for the cave thus far was 756 meters with a depth of 310 meters.

On April 30th, Frank Bogle and Mark Minton found Nita Ntau (Wind Cave) while ridge- walking in the vicinity of Nita Nido. With difficulty, Mark free climbed the first two drops of 4 and 5 meters before being stopped at a third drop. The walking passage had a small stream and tremendous air flow.

The following day, Frank, Jim, Richard, Mark, and Nancy Weaver de-rigged Nita Nido and checked leads in the upper part of the cave. They found 100 to 200m of large passage (not surveyed) that had air flow and surface debris, but ended in breakdown. The end was probably a collapsed entrance, although no daylight was visible.

All but Youmans then proceeded to Nita Ntau to begin exploration. The team explored down drops of 4, 5, 9, 5, 4, 12, 12 meters after some difficult in route finding. They stopped at another pit with great air flow. They exited the cave after three hours.

On May 3rd, Mark and Nancy did a surface survey from Nido to Ntau (a few meters lower elevation), then began surveying Ntau from the entrance.

Frank, Jim, and Richard continued the exploration that had ended at the top of a 14-meter drop. They rigged one more shaft of 7 meters before they discover a huge shaft.

Rock fall indicated that it was deeper than the TAG Shaft. Out of rope, the team started to surveyed out. Their mechanical pencils stopped working after only twelve stations of surveying so they headed out.

They met Mark and Nancy just as they were finishing their own survey of 22 stations and 149 meters of traverse. Mark and Nancy gave their pencils to Frank, Jim, and Richard, who turned around and continued to survey back towards the deep shaft. They set 25 stations and surveyed 235 meters of traverse.

Some controversy erupted because some of the TAG cavers wanted to rescind the use of the name TAG Shaft in Nido and use it instead at the even more spectacular drop in Ntau. A field plot by Minton showed the big pit in Ntau was directly over the TAG Shaft in Nido, so it's probably a moot point Mark notes.

On May 5th, Frank, Jim, Richard and Mark finished Ntau. At the top of the big pit was an alcove where they set two $^{3}/_{8}$-inch bolts to rig the pit. Richard was first down and rappelled to the end of the rope. A rope was sent down, and he tied a second rope to the first and to reach the floor.

On bottom Schreiber immediately recognized that they were in the same TAG Shaft as the survey had predicted. A free drop, the TAG Shaft was measured to be a total of 130m deep. The ceiling is at least 25 meters higher than lip, and could have leads. A larger stream entered the pit about half way down the drop.

The team surveyed the closure to Nido's tie-in station and de-rigged eighteen ropes on an eight hour trip. The total survey for Nita Ntau was 540 meters of traverse and a depth of 307 meter deep. The total traverse for the Nido/ Ntau system is 1296 meters and total depth of 310 meters.

A couple of teeth from a potentially new species of peccary (according to Dr. Ernest Lundelius at University of Texas at Austin) were found in the Ntau entrance, and a further collection of remains would be warranted.

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Nita Nido y Nita Ntau, Huautla, Oaxaca

Nita Nido y Nita Ntau se encontraron durante una búsqueda de entradas superiores a La Grieta, cercana a Huautla. Al explorar y topografiar estas cuevas, durante la primavera de 1985, se conectaron en un tiro que mide 130 metros a partir de Ntau.

CAVERNA DE SAN BARTOLO TUTOTEPEC

Ricardo Arias F.

In 1991, members of the Grupo Espeleológico Mexicano and the Asociación de Excursionismo y Montañismo del Instituto Politécnico Nacional mapped a new and very interesting cave in the karst of Hidalgo. Jorge de Urquijo Tovar was the first to explore the cave and motivate the rest of us. Professor Alberto Meráz Lara was the team's precise and excellent sketcher, assisted by José Guerrero Alegría, who made the cross sections and added other fine details. Other companions were Samuel Serratos, Martín Dario, Pedro Quezada, and Alejando Villagrán. We greatly appreciate the support, respect, and sincere interest of the authorities in San Bartolo Tutotepec and its kind people, and we hope our work creates more public interest in this beautiful town.

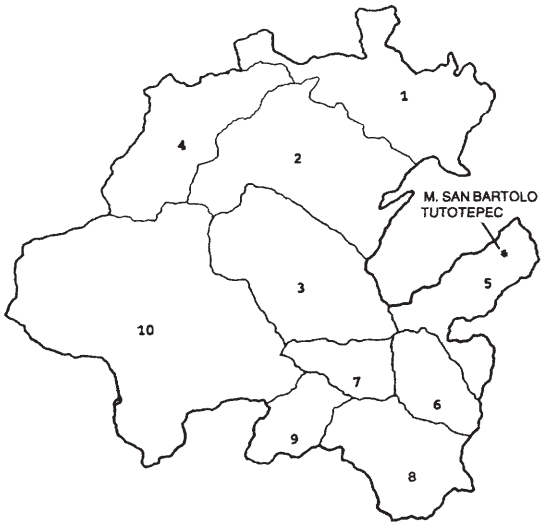
San Bartolo Tutotepec is in the Sierra de Tenango, a chain in the Sierra Madre Oriental. Tutotepec comes from a Nahuatl root, and it means the pigeon mountian. The area has an average temperature of 16 degrees C. Summers are warm and humid, with a lot of rain and fog. The region is filled with great forests of oak and ocote. The cave is located in the INEGI 1:50,000 map F14D73, Pahuatlán, at 20°24'37" N and 98°12'36" W, 1400 meters above sea level in the Cerro de la Gruta, which is visible from the center of town. The karst in which the cave is located is formed in the Lower Jurassic Huayacocotla formation. The Totolapa formation of similar age is nearby.

The route to the cave from Mexico City passes through Tulancingo, Poza Rica, and Metepec. From Metepec, a road can take you 40 kilometers to San Bartolo Tutotepec.

The cave is well known to the inhabitants of the area. They visit the cave for magic and healing purposes. These ceremonies take place in the entrance area, where it is possible to find offerings from the ceremonies. Some people say that local soldiers hid in the cave during the revolution.

The cave is mostly a borehole 411 meters long and about 20 meters wide, with an abundance of flowstone and formations. It has two seasonal lakes. The main passage continues to a waterfall, at the base of which begins another branch that is dangerous to visit during rainy periods because of floods. At the end of the cave, a climb will take you to another 20 meters of small passage with pretty formations. The mapped length of the cave is 437 meters and the depth is 11 meters. There are still some side passages to be mapped. During our visit, we found troglobitic shrimp in one of the lakes and bats in the entrance area.

San Bartolo Tutotepec is one of the rainiest places in Mexico and the wettest place in Hidalgo that has limestone, so we can assume there are other caves to be explored. There is a nearby cave named Caverna del Zopilote that hasn't been explored.

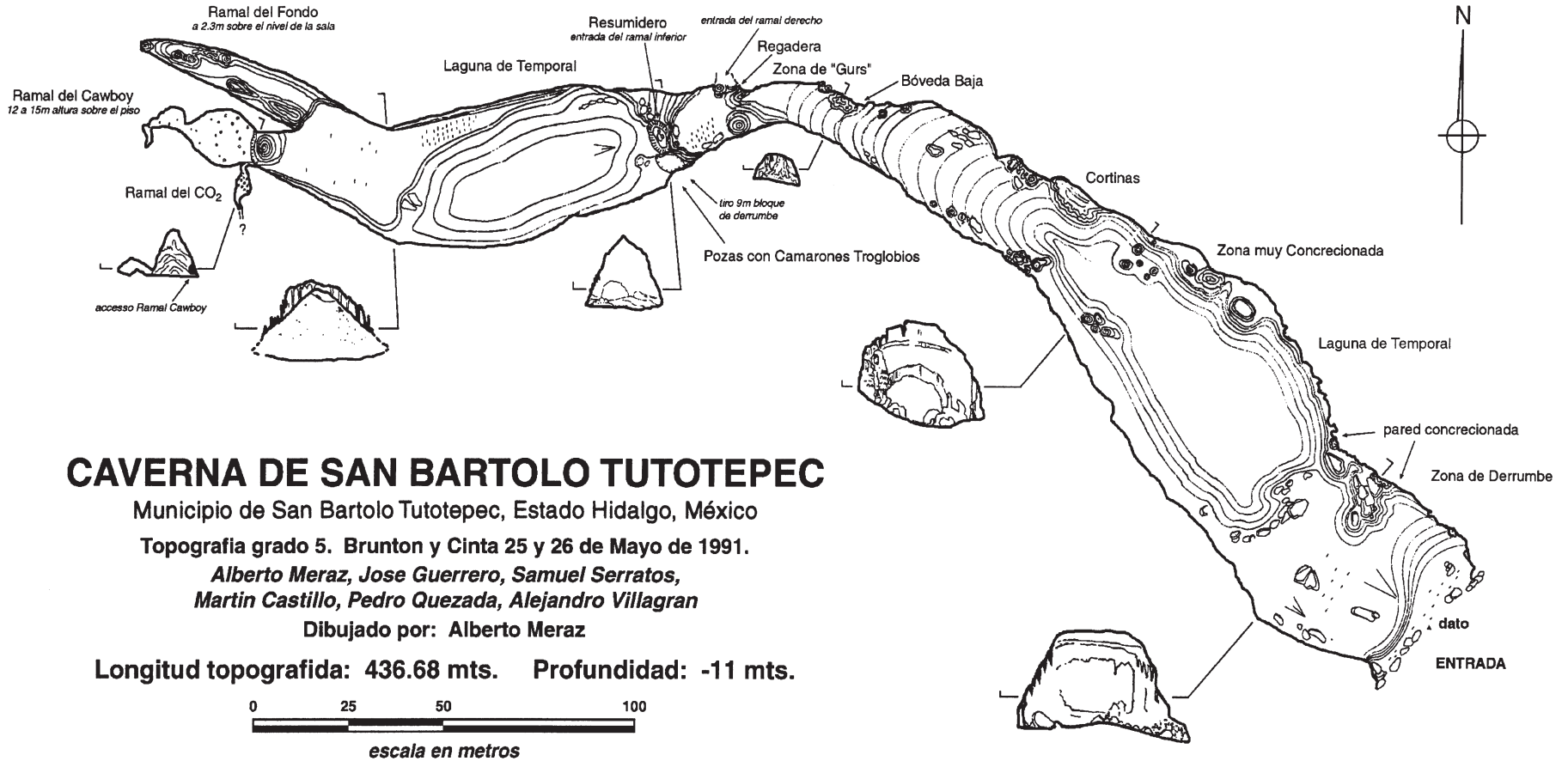


Geocultural areas of Hidalgo: 1. La Huasteca. 2. La Sierra Alta. 3. La Sierra Baja. 4. La Sierra Gorda. 5. La Sierra de Tenango. 6. El Valle de Tulancingo. 7. La Comarca Minera. 8. La Altiplanicie Pulquera. 9. La Cuenca de México. 10. El Valle del Mezquital.

Translated from Spanish by Oscar Berrones and revised by Bill Mixon. Map prepared for publication by Jim Kennedy.

CAVERNA DE SAN BARTOLO TUTOTEPEC, HIDALGO

En 1991 espeleólogos del GEM y del AEMIPN exploraron y topografiaron la gran cueva localizada en San Bartolo Tutotepec, Hidalgo. Esta cueva consiste principalmente de un gran salón de 411 metros de largo y cerca de 20 metros de ancho con un lago interno.



CAVERNA DE SAN BARTOLO TUTOTEPEC

Municipio de San Bartolo Tutotepec, Estado Hidalgo, México

Topografia grado 5. Brunton y Cinta 25 y 26 de Mayo de 1991.

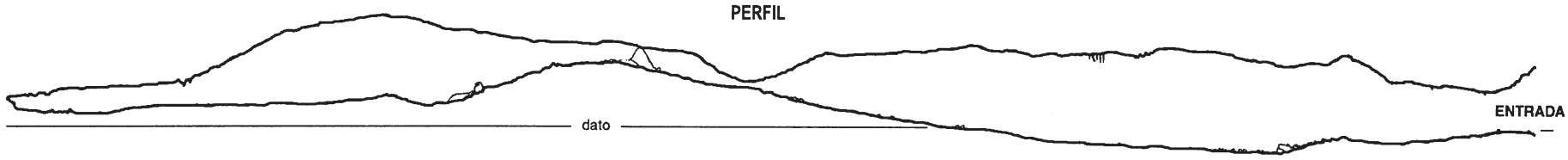
Alberto Meraz, Jose Guerrero, Samuel Serratos,
Martin Castillo, Pedro Quezada, Alejandro Villagran

Dibujado por: Alberto Meraz

Longitud topografida: 436.68 mts. Profundidad: -11 mts.

0 25 50 100

escala en metros



LAVA TUBES OF CUERNAVACA

Chris Lloyd

NOVEMBER 1996:

I just got back from a weekend of mapping lava tubes with Ramón Espinasa just south of Mexico City. He had tempted me with prospects of pushing crawls in the top of his second longest tube cave but fortunately decided (at my prompting) to ask and see if there weren't some new entrances that he hadn't seen before and which would likely be easier to explore.

Sure enough, about 300 meters from the car (which was parked over the bottom end of his biggest tube system—Cueva Iglesia) we asked the local residents if they had any entrances in their back yard and received a positive reply.

After seeing that one (called Cueva Mina by them) we asked if there weren't any more around—might as well find out where we are going to come out before we go in! So knowing that we had this one to come back to we went down hill in search of the obvious entrance after the water pipe.

"You can't miss it," we were told. And we didn't—for a change. It turned out to be a pit entrance that Ramón and I looked at and figured on finding an easier way into. But we had young Tatchi along. Ramón had first met Tatchi six years previously coming out of the other tube (Cueva Ferrocarríl) on Ramón's second exploration trip to the area.

Tatchi was 13 at the time and so keen to get out exploring caves with real cavers that he skipped school the next day to go up and discover the entrance to Cueva Iglesia, now the longest in the area at 3.1km. He just proceeded to downclimb into it pronouncing it quite doable, which it was.

It trended downhill at a steady 20 degrees in mainly walking or stooping passage. And you sure made sure you stooped when it was necessary for there are no nice brittle, fragile, calcite stalactites to break off—in these lava tubes there are solid, pointy, and sharp basalt stals which draw blood for those unwise enough to bump them.

There were also some nice levee structures left behind as the lava flowed along as a molten mass and the banks cooled leaving the equivalent of mud banks. Eventually we found the mud for real after about 400m downhill in one single, non-branching tube. Growing in the mud at the bottom were roots that looked very similar to a prickly cactus.

Going up hill from the entrance, but still in the cave, we passed some infill volcanic ash sediment which got Ramón quite excited as he is doing his Masters thesis on these caves and this might give him an opportunity to date the eruption that dumped the ash and thus help bracket the age of the caves. A few weeks previously I went through the tourist cave of Cacahuamilpa with Ramón and saw a volcanic lahar (a mud a rock flow produced by cataclysmic eruptions) plastered to the walls which had come from a volcano 50km upstream and which passed through the cave and continued 30km further downstream.

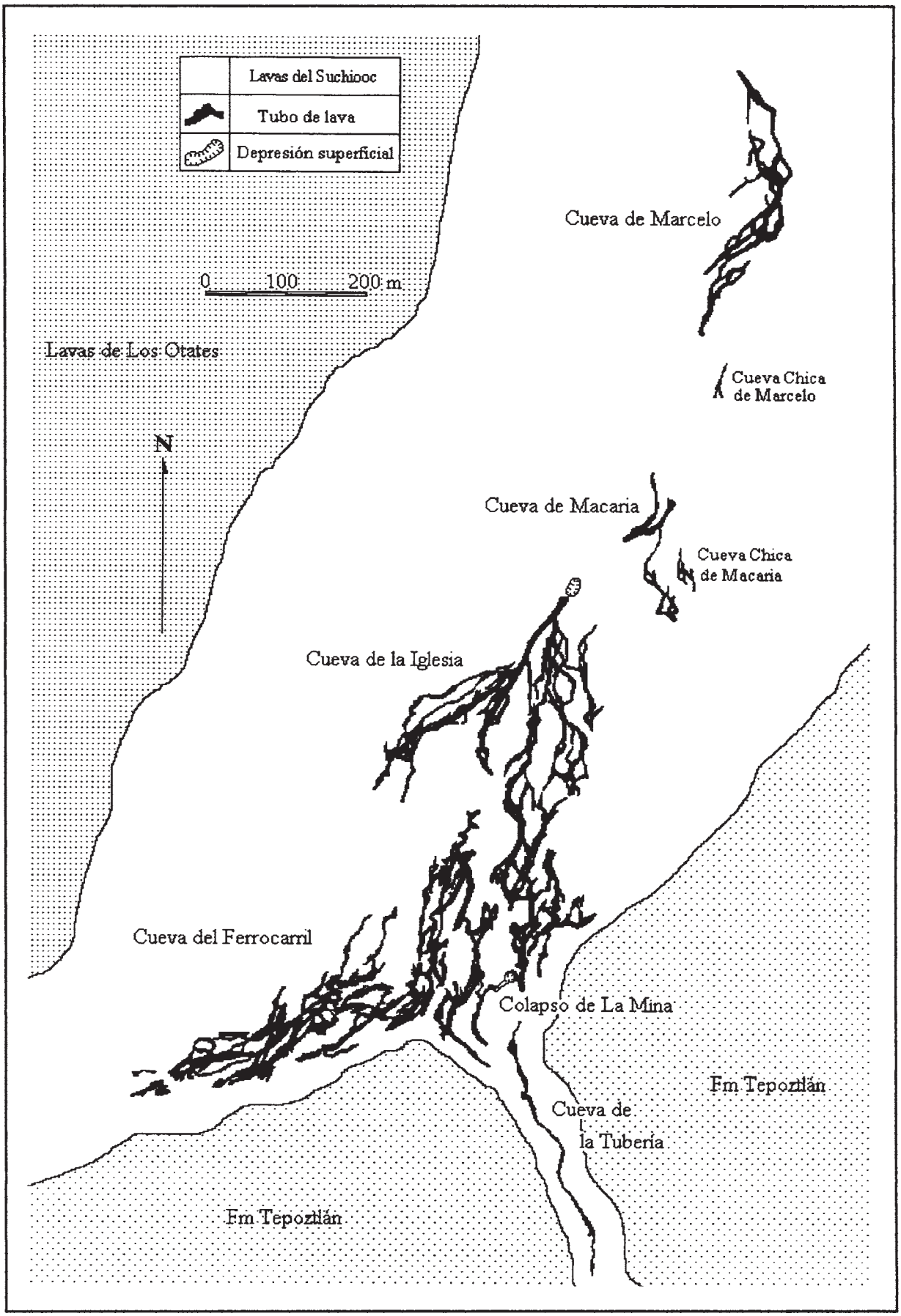
We then passed underneath a skylight entrance that showed flow marks indicating that surface lava flowed into this entrance and we could see the horizontal lines where it had ponded before draining out the bottom. Very similar to the water features that you see in limestone caves, but here the evidence is solidified in rock for posterity. Neat stuff.

Shortly above this point the lava flowed right to the roof, and thus we had finished Cueva de la Tuberia at 428m long and 116m deep. Having knocked off that part and still not reached the first entrance we headed back there and surveyed down what is surely the same tube that unfortunately became blocked by a lava plug. No easy digging for a connection here.

A side passage near the entrance beckoned us up into a crawlway. Having come all the way over from Guadalajara (a seven-hour, overnight bus ride) expecting to push crawls, I should have been in there like a shot. But after almost 500m of easy stuff I wasn't too keen to donate blood to this cave despite Ramón insisting that this was only pahoehoe lava.

Well I had to concede that it wasn't aa lava (so named because you go "aa aa" if you step on it), it still didn't look too friendly for belly crawls. As we could see at least 15m that was passable, I relinquished the lead tape position to Ramón and volunteered to record the distances as they shouted them back. As luck would have though in his shouting I could tell he had broken out into a much bigger space and it was going strong. Through I went.

Things started getting big and complicated as tubes branched off in multiple headings both upstream and down. We pushed on upwards trying to figure which was the big-


Lavas del Suchiooc
Tubo de lava
Depresión superficial
0 100 200 m
Lavas de Los Otates
N
Cueva de Marcelo
Cueva Chica de Marcelo
Cueva de Macaria
Cueva Chica de Macaria
Cueva de la Iglesia
Cueva del Ferrocarril
Colapso de La Mina
Fm Tepoztlán
Cueva de la Tubería
Fm Tepoztlán

gest tube and thus have the best chance of going the furthest before choking. We added another 200m or so before running out of steam.

Caving for seven hours with no fluid intake is not a good idea. I was quite dehydrated, while the others didn't even have enough fluid left to pee in their generators and were thus getting low on light. A good day though in the new Cueva Mina and we decided against pushing a dome climb the next day in a limestone cave in favour of continued mapping in this growing system.

Sunday morning had us going into yet another new entrance over by the top end of Cueva Ferrocarríl. This one was only 8m away from another one that Ramón's brother had found from the inside of Ferrocarríl. Being pretty sure we could easily connect with Ferrocarríl below us we headed upstream again. Lots of comfortable walking passage with branches anastomosing all over the place. Again we tried to follow the one most likely to continue and ended up surveying a few loops as the likely one didn't go.

The genesis of this part of the system involves the flowing lava melting through its own walls and breaching into a neighbouring tube. This may result in it cutting off the old one, or the new one with its left over solidified lava. We also saw evidence that supported Ramón's earlier thought that they also melt through their own floor creating an even larger tube probably due to the new increase in fresh lava.

After another 4-500m we were in an area of large wide tubes and we could hear the sound of music. Then we could hear foot steps of people running over head! The roof must be only a meter or so thick and we were obviously underneath the town. Which meant also that we were very near Cueva Iglesia, which we had suspected anyway. One tube had particularly nice levees and a flow that wrapped neatly around a heart shaped rafted block. Truly this was the heart of the whole system and was thus named the Heart Room.

Shortly upstream it pinched down again, but this time in a soft mud floor, just like the one Ramón remembered being in the bottom of Cueva Iglesia. Oh, so close. So we decided to head downstream on the eastern side of the heart where the tubes seemed to split, one half going down the Ferrocarríl drainage and the other going down the Cueva Mina side that we had just mapped yesterday. We agreed on ten more legs as funny enough, we were out of water again (those two not having brought any again!). The tubes here were 15m wide and some 10m high and a treat to cruise down. In fewer than ten shots we connected into the line we had surveyed the day before confirming that the divide really did exist. So quite chaffed at this we headed back down to make the connection with Ferrocarríl.

Ramón Espinasa
April 1999
Length, depth in meters

LONG LAVA TUBES OF MEXICO

1	Ferrocarril-Mina Inferior	Volcán Suchiooc	Morelos	5623	72
2	Iglesia-Mina Superior	Volcán Suchiooc	Morelos	5145	54
3	Cueva del Diablo	Volcán Suchiooc	Morelos	2020	70
4	Cañada de los Pastores	Rayón	San Luis Potosí	1882	43
5	Cueva de Huesitos	Volcán Xitle		1792	18
6	Cueva del Arbol	Volcán Suchiooc	Morelos	1480	118
7	Chimalacatepec	Volcán Suchiooc	Morelos	1388	201
8	Cueva de Marcelo	Volcán Suchiooc	Morelos	1268	62
9	Pedro el Negro	Volcán Xitle		1132	35
10	Cueva del Aire	Volcán Yololica		1083	87
11	Los Cuicillos	Rayón	San Luis Potosí	976	14
12	Sierra Partida	Ocampo	Tamaulipas	850	65
13	Cueva del Salvial	Rayón	San Luis Potosí	796	14
14	Cueva del Cocodrilo	Volcán Xitle		725	21
15	Cueva del Volcancillo	Toxtlacoaya	Veracruz	685	139

After surveying a couple of dead ends we finally crawled through into some good going passage. Which kept going and going and going. Where was the next bloody entrance? We knew that Ramón's brother only went 50m or so and we had just surveyed close to a 100m with tubes still going off in various directions. One junction had six passages leading away from it! Ramón was really wiped now so we sat and waited while the super kid ran up and down and back a couple times trying to locate that elusive entrance. With no luck. So close yet again.

We must be underneath or beside the upper passages of Ferrocarríl, but the connection will have to wait until another trip. I don't imagine that Ramón will have too much trouble rounding up a new crew this time as joining these three caves together will create one of the top ten longest lava tubes in the world. Not a bad weekend.

UPDATE TO 1999:

That weekend did indeed provide the incentive to get the project going again and over the next year about 8km more of tubes were mapped. I did one more trip, while other visiting Canadians such as Taco Van Ieperen and Kirk Safford also helped out. Cueva Iglesia and Ferrocarríl went from being about 3.1km and 3km long respectively to 5.145 and 5.623km. We had gone right by the connection into Ferrocarríl the day I was there as it turned out. Despite all the work though, the two main caves remain unconnected.

Slowly the available tubes are being crossed off. The most recent attempt was by Ramón's brother once again and resulted in him popping out yet another new entrance that happened to be a very small enclosure for a rather large bull. Needless to say this surprised the bull enormously and it actually jumped right out of the enclosure and went raging through town. This did not go over well with the local residents, particularly the bull's owner. Luis figures it best to let the connection search wait for a year or two before returning.

Tubos de lava en Cuernavaca

En 1996 el autor visitó, junto con Ramón Espinasa, tubos de lava formados en un flujo del Volcán Suchiooc, en el estado de Morelos. Esta exploración continuó hasta 1999. Las dos cuevas más largas, Iglesia y Ferrocarril, permanecen aún sin conectarse.

EXPLORING HEADWALL CAVE – NITA NASHI, MUNICIPIO DE HUAUTLA DE JIMENEZ, OAXACA

James H. Smith Jr.

Nita Nashi was discovered in 1980 during the Río Iglesia Expedition by Mark Minton while ridgewalking in the vicinity of Plan de Escoba. Mark was particularly interested in finding a higher entrance to Sótano San Agustín which could only be located north of the village of San Agustín.

From the town one could see karst peaks over 400 meters higher in elevation. The geology also indicated that the high peaks were likely apart of the same karst groundwater basin Sótano San Agustín is within. Located half way between the high peaks were La Grieta and Sótano Agua de Carrizo, explored during 1977 and 1978.

Their surveys indicated a hydraulic connection with Sótano San Agustín although no physical connection had been made. Nashi had been only cursorily checked with exploration just venturing beyond the sight of daylight to the first drop. The exploration of Nita Nashi would have to wait until 1982.

Minton's other discovery, Nita Nanta, located at the highest possible elevation of 2060 meters was explored to -525 meters. The main thrust of the 1980 expedition was in Li Nita, which was explored to a connection with Sótano San Agustín and subsequently was Mexico's first 1,000 meter deep cave.

Remembering the Nita Nashi lead and beckoning air flow, Minton organized an expedition in the spring of 1982 to explore the cave. The expedition consisted of Darlene Anthony (TN), Mike Doe (AZ), Ed Holladay (TN), Chris Kerr (TN), Hal Lloyd (TX), Mike McWhirter (TX), Mark Minton (TX), Lisa Wilk (TX), Ted Wilson (IN), Pam Duncan (TN), Jim Smith (TN), Bill Steele (TX), Richard Schreiber (GA), Dale Weisman (TX), Hans Bodenheimer (AZ), Chris Albers (WY), Scott Davis (AZ), Doug Powell (AZ), and Rick Rigg (ID).

The first attempt at exploration occurred April 7th. In broad daylight, Mike Doe, Hal Lloyd, Mike McWhirter, Mark Minton, Jim Smith, and Lisa Wilk crossed the sinkhole valley of Plan de Escoba for Nita Nashi (Headwall Cave in Mazatec), but were turned back by drunk and non-Spanish-speaking locals at the entrance.

This was the first indication that the Plan de Escoba community was somewhat unfriendly. They did not want cavers going into their caves. To complicate matters, a major trail lead to Nashi's entrance as it was a local water source. We decided that the cave would have to be entered and exited at night, so we could slip past the houses near the entrance under cover of darkness.

Several days later, Chris Kerr, Ed Holladay, and Hal Lloyd went into Nashi at 4 AM. They explored down the first five drops of 10, 15, 15, 6, and 7 meters. The obvious route led down three short climbdowns to a room with one lead—a 9-inch by 15-inch hole which dropped down a hole whose depth was undetermined.

Chris rigged a rope. Hal squeezed through and rapelled into a 2m by 5m room. He explored for fifteen minutes before returning. Meanwhile, Chris rigged another rope through a window in the side of the passage and found that the cave continued in "the usual overflow passage." The team rigged ropes drops of 4, 5, 4, and 3.5 meters and discovered a big breakdown passage.

They had also discovered a promising camp chamber if camp trips would be needed to fully explore the cave. Near the drop in the main passage, Chris found a nice grotto nearly choked with helectites and stalactites and massive columns. Heading deeper into the cave they crossed over breakdown piles into a large chamber.

At first it appeared that the cave had ended, but along one wall covered in flowstone and stalactites was a ledge overlooking an estimated drop of 20 meters. Since the team was out of rope, they climbed around the edge of the drop and saw a dark void above. They free climbed up two climbs of 10 and 6 meters.

Chris completed the last climb to emerge into a huge chamber. Hal's sketch map called it the Monster Room. Tremendous airflow and unchecked leads required a return trip, so they exited the following morning at 1:30.

On April 12th, Scott Davis, Mike McWhirter, and Mark did a surface survey to Nashi, but the tie-in was left hanging a couple of shots from the entrance due to unfriendly locals at the cave. The notes indicated an unchecked sink at the end of surface survey that should be checked for another entrance to the cave. It never was checked.

On April 13th, another late night entry was made by Scott Davis, Hans Bodenheimer, and Hal Lloyd. They return to the 20m drop. Hal wrote, "At the bottom of the shaft we followed the passage until it

became too tight. The found a low breakdown floored room. On one side of this room strong air emerged from an area too tight to fit."

They succeed in digging through a couple of body lengths long crawl of hard packed clay to going cave. The air was so strong that digging produced a hail storm of dirt and gravel. The dig was known as the "Brown Belly Blues." The team emerged into large walking passage.

A small stream entered from a small side passage. They scooped half a kilometer of large walking passage with cascades. They descended two short drops of 3 and 4 meters. The "Arizona Extension," as it was called, ended in a large chamber dubbed the Supai Room (for its red colored walls) measuring 40 by 20 meters.

They continued to follow the stream wading through pools and canyon passage requiring stooping. The passage seemed to do a 180 degree turn for 100 meters to the next drop where they ended the exploration for that day.

Hal wrote, "I looked out over a small wall over the edge of the drop across the void and panned my wheat light beam across the walls and down the shaft. I truly felt a sense of awe. The prospect of the cave beyond filled us with a joyous sense of anticipation ... the bedrock walls were white and solid not crumbly and dark as in the previous sections of the cave." The explorers attempted to survey out, but the mechanical pencils had fouled.

With the breakthrough by the Arizona boys, a strong team with mountains of rope entered the cave before sunrise on April 16th. The team consisted of Mike McWhirter, Hal Lloyd, Scott Davis, Hans Bodenheimer, and Chris Kerr. There was evidence of a "Mazatack" at the entrance—it smelled of burnt corn stalks. The Mazatecs had tried to smoke out the gringos.

The team retraced their steps to the beginning of a new shaft series. The team rigged small wet drops of 6, 4, 6, 5, 4, 7, 3, and 5 meters to the top of a deep drop. Hal wrote, "The pit was a huge shaft an estimated 100 meters deep."

The shaft was broken by ledges and rigged or redirected so each team member could scoop a drop. The pit drops were 25 and 19 meters to a deep pool. The shaft had been bottomed with no way to continue.

Chris took one end of the rope and climbed across the wall to a large window in the side of the shaft. He rigged a Tyrolean. This led to 13, 11, and 13 meter drops and a depth of -325 meters.

Minton wrote, "The end of the first shaft series led to a beautiful but treacherous steeply descending chert ledge passage." The team surveyed out and exited the cave after twenty-four hour trip.

On April 22nd, Scott, Ed, and Mark left for Nashi at 3 AM. Mark reported, "Fine Cave! Quite large for ridge cave. Much gypsum. We increased the size of a couple of digs and moved a duffle of rope to -325 meters, then explored the Chert Ledge Passage and three drops—the deepest a 40-meter shaft.

"Ran out of rope at the top of another estimated 15-meter drop. Surveyed out. Scott was ill on way out but made it okay. The team exited after a twenty hour trip, then we finished the entrance and surface tie-in survey. Returned to field house after twenty four hours."

On April 25th, Mark plotted the Nashi data to reveal a depth of 450 meters with the cave heading into a blank area of map. The nearest potential connection was the V-survey of La Grieta, but it was over a kilometer away and 150 meters deeper.

That night Scott, Ed, Hal, Mike M., and Lisa headed for Nashi in the middle of the night, but returned because they forgot to take a survey tape and didn't have time to get one and still get underground before dawn.

On April 27th, the previous Nashi crew got their survey tape and made it to the cave before dawn. They did three more drops of 27, 25, and 10 meters and then went bombing off south in relatively horizontal passage as cave hit the regional shale layer.

Hal wrote, "As good luck would have it, the drop I got to scoop was 10m deep and into the beginning of the Six Hour Passage." Ed and Hal scooped ahead leaving the others for six hours without finding the end!

Hal continued, "Ed was next to descend the drop and soon caught up to me because I had to negotiate a hairy freeclimb over a pit to the passage on the other side. Once beyond this obstacle, we felt supercharged, gazing into booming borehole beyond.

"We were quick stepping down the virgin passage. It was obvious to me that Ed wanted to run ahead, as he tried to lunge past me I had to side step into him delivering a well planted shoulder/elbow slam into his chest.

"Laughing, he stumbled down on one knee and I gained more ground. At one point there was a split in the passage: one wet and one dry. Ed took the dry passage, the bigger of the two, and forged ahead.

"At another point I grabbed Ed's ankle and wrestled him down and regained the lead! In a couple of spots the downclimbs were hairy. We climbed one small over hanging drop using our seat harnesses as rigging and etriers."

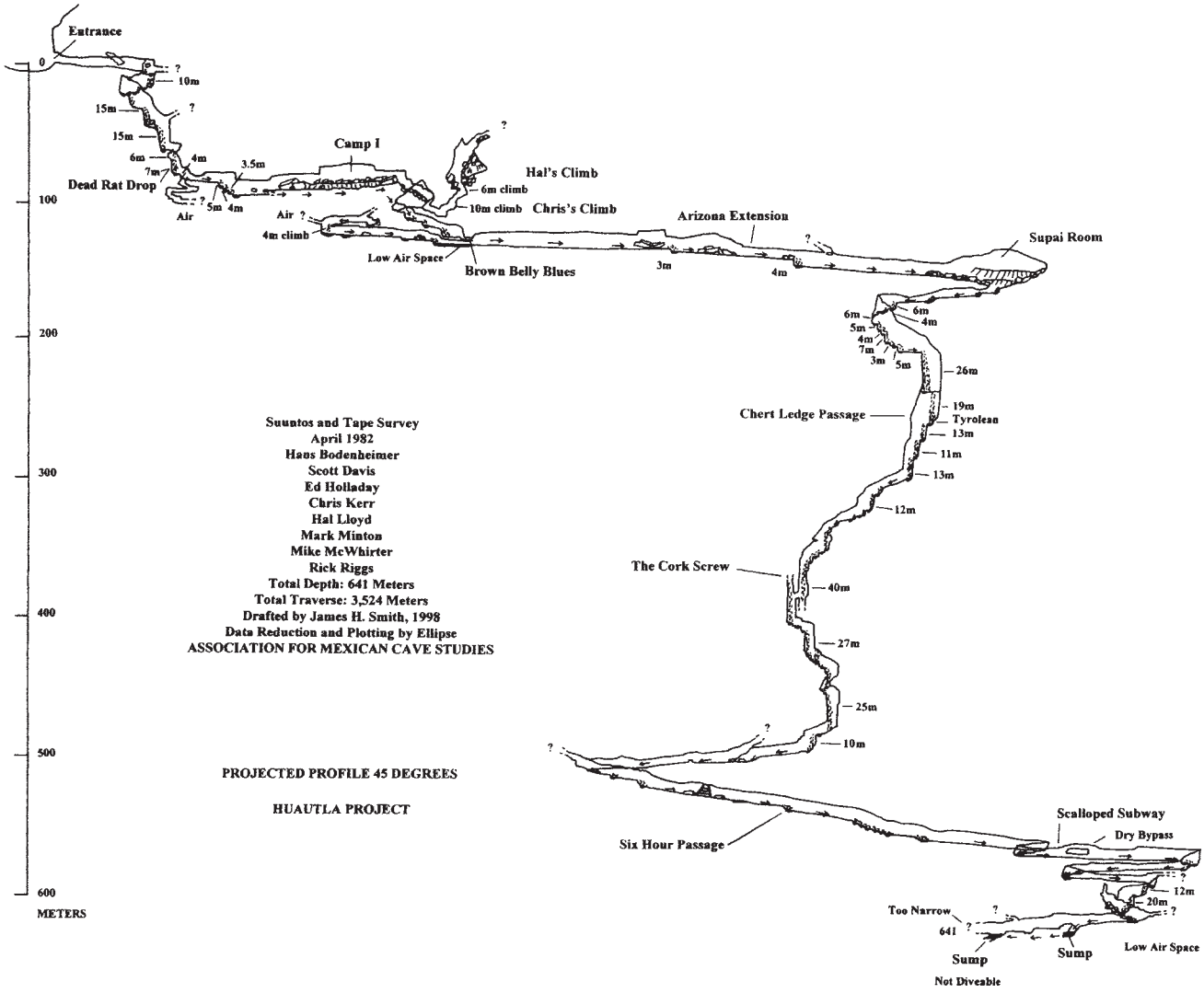
Their booty scoop ended at a climb up that Ed was able climb but Hal could not. Ed yelled "Booty Ho!," but only scooped another 30 meters of passage. Ed had threatened to continue on solo but Hal had threatened to short rope him.

Hal, again, "We made our way back to the drop and found a bitter note stating, 'YOU SURVEY IT!'" The rest of crew were super bummed out and only surveyed 48 stations, a small part of the scoop. Given the competitive nature of the scoop, the other team members would have been involved in a brawl for booty with the two booty scooping gladiators. The last person exited after an epic thirty-two hours!

On April 28th, Chris Albers, Rick Rigg, and Mark went to take sponsorship photos in Nashi at 5 AM. They met a survey crew on their

NITA NASHI

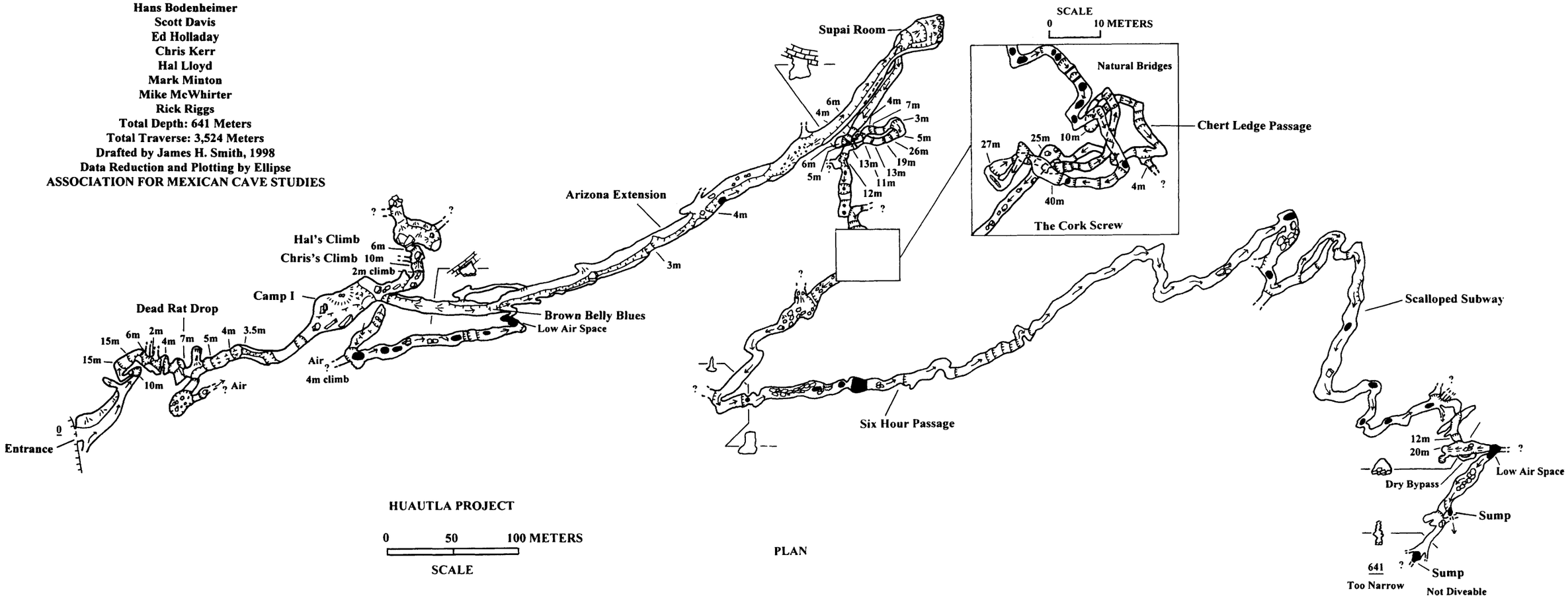
Plan de Escoba, Oaxaca, Mexico
Municipio de Huautla de Jimenez



NITA NASHI

Plan de Escoba, Oaxaca, Mexico
Municipio de Huautla de Jimenez

Suuntos and Tape Survey
April 1982
Hans Bodenheimer
Scott Davis
Ed Holladay
Chris Kerr
Hal Lloyd
Mark Minton
Mike McWhirter
Rick Riggs
Total Depth: 641 Meters
Total Traverse: 3,524 Meters
Drafted by James H. Smith, 1998
Data Reduction and Plotting by Ellipse
ASSOCIATION FOR MEXICAN CAVE STUDIES



way out. They took lots of pictures and got as far as the Tyrolean. On the way out they explored upstream from the Brown Belly Blues for 200 meters. They stopped at a crumbly 4-meter waterfall with good wind in mostly walking passage.

While trying to plot up new Nashi data, Mark discovered a useless azimuth on the second shot. That shot had to be re-shot, and subsequently added 75 meters of depth.

The thirty-two hour trip meant only one recourse and that was to camp. The endurance limit for day trips had been met, and this would eliminate the need for midnight trips.

On May 1st, Scott, Ed, Hal, Mike M., Mark, and Rick left for a one-week Nashi camp at 9 PM. It took only an hour and a half from the entrance to camp (less than 100 meters deep), including re-rigging a couple of drops. It was a great camp—easy water, nice dirt sleeping area, very private shitter. Hal even brought an extra "luxury duffle."

The next day, the camp crew split into two teams. Scott, Ed, and Hal began surveying in at their previous scoop. Hal wrote, "Everyone was pissed off at Ed and I so for punishment we got to survey the Six Hour Passage. Ed and I got to enjoy a real good look at our scoop and it was sheer joy for us."

Minton wrote, "Mike M., Rick, and I were loaded for bear with push ropes. Ahead, we rigged a climb previously done on harnesses, and explored further. After only two more drops of 12 and 20 meters it nearly sumped, then just beyond was a genuine sump and narrow passage.

"It didn't look good for diving. Some high leads further back were left and only poorly checked. We surveyed out 41 stations and met the other crew as they were finishing after 167 stations! It may be a record: 208 survey stations beginning over 500 meters below start point. We lost the air and couldn't determine when or where. With no good leads we derigged back to station MG1 on a twenty-four hour trip. Many got bad grit rashes."

On May 3rd, Chris Albers and Mike Doe visited the Nashi camp to say they woull be leaving for home early, along with Lisa. Rick decided to join them.

May 4th was a gonk day in camp. Mark reduced survey data and found they added almost 1.2km of traverse, to a depth of 641m. The cave had turned west, away from La Grieta, and ended nearly under the entrance to Li Nita, but over 650 meters deeper.

On May 5th, the camp crew began derigging below camp. Mark checked leads on way down. The only one that went was a parallel passage at MF34. After a short distance it led to a 6-meter pit, which probably came out above drop at MF14. The lead was not pursued further.

Mark grabbed a rope duffle at MG1 and headed up. Ed and Mike M. follow and derigged the third pit series. Scott and Hal derigged the second pit series. As Mark took a rope duffle on up to the second drop stash point, Ed and Mike kept pulling ropes until the second crew met them. All ropes except Mark's duffle left in camp or at the stash near the second drop.

On May 6th, Ed and Mark surveyed passage upstream from Brown Belly Blues: over 200 meters in 22 stations. Passage was enlarging where they stopped at a waterfall. They also checked an infielder in the B Room which did not go.

On May 7th, the camp crew was up at 2:30 AM to get out of cave by dawn, but they were late and exited at 7 AM. Some locals were around but they had no hassles.

They carried their duffles as far as Li Nita where they stashed them in the entrance, then walked down to get the bus and a ride back to town. Hal (with two duffels!) and Mike M. bypassed Li Nita and ended up carrying theirs all the way home. Most of the ropes were left stashed at the second drop in Nashi until 1983. Nita Nashi was explored to a depth of 641 meters and a length of 3,524 meters.

As a post script to the exploration, dye tracing performed by Jim Smith in 1988 determined that the water in Nita Nashi enters Sótano San Agustín at the Scorpion Sump. If Nashi were physically connected to Sistema Huautla, Nashi would be approximately 1100 meters deep.

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Nita Nashi, Huautla, Oaxaca

La cueva Nita Nashi fue descubierta en 1980, en el área de Huautla, Oaxaca. Se exploró y topografió durante abril y mayo de 1982. Este proyecto incluyó un campamento subterráneo de una semana de duración. Nita Nashi alcanza hasta el momento 641 y 3,524 metros de profundidad y longitud, respectivamente.

Above and Beyond the Chapel, Cenote Ponderosa, Quintana Roo

Trevor LoRe

It was in June 1990 that Nancy and Tony DeRosa first entered Cenote Ponderosa, near Akumal, in Mexico's Yucatán Peninsula. Initial exploration of Sistema Ponderosa began with Nancy and Tony DeRosa (owners of Aquatech / Villas DeRosa) and Steve Gerrard.

This was indeed a bonanza—Ponderosa is both a pun on the DeRosas' name and a reference to the TV series *Bonanza.* Currently the Cenote Ponderosa Cave System has over 12,000 meters of underwater cave passage surveyed with connections to at least nineteen cenotes.

It would be a couple years later that I would do the thirty-five minute dive reaching the large, oblong freshwater room named Pool Hall. At the rear of this room is an air filled dome containing thousands of live stalactites. This was named The Chapel by the original explores.

I was able to return again in December 1995. This time, after swimming to the Chapel I would exit with my friend, Brian Kakuk, and spend the day exploring the dry cave passages. Brian and fellow cave diver Pat Precin had explored some of the passage during a visit in 1994. The 1995 exploration would take a different route, starting sixty meters from the beginning through a .5m by .5m restriction.

After another yet tighter restriction was maneuvered, crawling over smooth, hard flowstone, we entered a small but highly decorated room. We were unable to stand upright as the height was only a little over a meter. As we continued, we eventually found our way to yet another small room.

This room had a 3-meter high dome shaped ceiling, allowing us to stand up—a welcome change! It lacked any speleothem formations, however, the walls contained remains of coral reef in the limestone. We would name this the Coral Room. Another 60m beyond this room would be our turning point.

In December 1997, I would return yet again with my cave diving partner and mother, Connie LoRe. She is a guide for Aquatech / Villas DeRosa in the Yucatán and has led many cave divers to the Chapel to witness this huge, highly decorated air chamber.

However, this would be her first experience at dry caving. She was excited and yet a little apprehensive recognizing that the mental and physical challenges of dry caving would be somewhat different than cave diving and a totally new experience for her.

We were supplied diver propulsion vehicles by the DeRosas to hasten the thirty-five minute dive to the start of our adventure. In addition to our normal cave diving gear, we brought all the spelunking equipment that we needed, plus dry clothes and food. I had constructed a dry tube using 6" PVC pipe and a monitor well plug which worked reasonably well

Early on a December morning, we entered the water at Cenote Ponderosa. A short distance on the main line and we reached Cenote Corral at which point we would run a gap reel to make a jump to a cave line that would take us to the Chapel, some 750m from our entry point.

After removing our diving gear, we climbed out of the water onto a limestone ledge and strung up a clothesline utilizing a safety reel. We hung up our wet suits, secured our cave diving equipment, and changed into "dry clothes." It would not be more than twenty minutes when we were no longer dry due to the 100% humidity in the cave! A thermometer left in the Chapel dome showed air temperature at 29.5°C.

The rooms we encountered averaged six to twelve meters wide and a meter to a meter and a half in height. The cave connecting these rooms averaged slightly less than a meter high and wide. Roots from the jungle above came through the ceiling and into the floor.

The dry passages overlapped the submerged passages, giving the cave some very unique features. In many cases highly decorated fractures in the limestone ceiling caught our attention. These fractures also run along the floor, which gave us small glimpses of the submerged cave below.

The floor of the cave was largely covered by clay. However, in some areas, flowstone completely covered the floor. Much of this exploration was spent crawling on our stomachs through wet clay as we slithered through small, tight passages and tunnels.

At times it was necessary to remove our waist belts in order to squirm through restrictions. Occasionally, when we paused to take a few photos, it was difficult to find a dry and somewhat clean piece of cloth to wipe off the camera lens. Mud and clay coated us and all of our equipment.

Often there were leads going in

several directions and we spent a considerable amount of time "walling out," retracing our steps and trying other passages. We encountered only three small rooms or areas in which we could stand. Being able to stand erect and stretch was a most enjoyable treat after hours of crawling and squatting

Several hours into the exploration we came to a large room that measured ten meters by fifteen meters, with a floor to ceiling height of only a meter or so. Approximately one-third of the floor was a smooth flowstone with the remainder clay. We named this the "Pancake Room."

The north end of the room was highly decorated with stalactites and contained a fresh water window to the submerged cave below. There was a small vertical crevice at this point which led into a very small chamber.

We decided to rest in the Pancake Room and wash off some of the clay and mud that by now coated almost every inch of our bodies. As we rested, we discussed the differences and similarities (both mental and physical) in cave diving and dry caving. We knew this would not be our last joint experience as we planned future challenges and ventures together. Two bats circled the room and us, their visitors, as we decided it was time to start the work of surveying out.

Upon surveying out, Connie kept mumbling in disbelief, "Are you sure we are going the right way? I can hardly believe I went through that restriction!" Other than the two bats in the last room, spiders were the only other form of life encountered, and they were always given the right of way in the passages. After six hours of exploring, we emerged with just under 300m of surveyed dry cave passage

We jumped into the water at the Chapel dome to rinse off, and again donned our wetsuits and cave gear to begin the dive back to Cenote Ponderosa. The dive back to the cave entrance reminded me how scootering through a water filled cave sure beats crawling on your stomach in wet clay and high humidity. When we finally surfaced at the platform, we smiled to each other, knowing we would be back again.

Cenote Ponderosa, Quintana Roo

Trevor y Connie LoRe exploraron en diciembre de 1997 el Cenote Ponderosa, en el estado de Quintana Roo. Durante su exploración topografiaron 300 metros de pasaje seco que encontraron después de bucear 750 metros. La mayoría de los pasajes eran pequeños y lodosos y en algunos lugares se alcanzaba a observar, en la parte inferior, los pasajes llenos de agua.

HISTORY

SOME VISITS TO CACAHUAMILPA

Ulysses S. Grant and J Harlen Bretz

In 1848, during the armistice following the Mexican-American War, Captain Ulysses S. Grant, after an attempt to climb Popo, decided to "visit the great caves of Mexico, some ninety miles [distant] on the road to Acapulco." The cave visited was probably Grutas de Caca-huamilpa in Guerrero. He described his visit to the cave in his Personal Memoirs of U. S. Grant, *published in 1885. (The material here is copied from articles in the* Journal of Spelean History, *volume 20, 1986, and the November 1993* NSS News.*)*

After a day's rest at Cuernavaca, our party set out again on the journey to the great caves of Mexico. We had proceeded but a few miles when we were stopped, as before, by a guard and notified that the terms of the existing armistice did not permit us to go further in that direction.

Upon convincing the guard that we were a mere party of pleasure seekers desirous of visiting the great natural curiosities of the country which we expected soon to leave, we were conducted to a large hacienda nearby, and directed to remain there until the commanding general of that department could be communicated with and his decision obtained as to whether we should be permitted to pursue our journey. The guard promised to send a messenger at once, and expected a reply by night.

At night there was no response from the commanding general, but the captain of the guard was sure he would have a reply by morning. Again in the morning there was no reply. The second evening the same thing happened, and finally we learned that the guard had sent no message or messenger to the department commander. We determined therefore to go on unless stopped by a force sufficient to compel obedience. . . .

That night we rested at a large coffee plantation, some eight miles from the cave we were on the way to visit. . . . The next morning we were at the mouth of the cave at an early hour, provided with guides, candles and rockets.

We explored to a distance of about three miles from the entrance, and found a succession of chambers of great dimensions and of great beauty when lit up with our rockets. Stalactites and stalagmites of all sizes were discovered. Some of the former were many feet in diameter and extended from ceiling to floor; some of the latter were but a few feet high from the floor; but the formation is going on constantly, and many centuries hence these stalagmites will extend to the ceiling and become complete columns.

The stalagmites were all a little concave, and the cavities were filled with water. The water percolates through the roof, a drop at a time —often the drops several minutes apart—and more or less charged with mineral matter. Evaporation goes on slowly, leaving the mineral behind. This in time makes the immense columns, many of them thousands of tons in weight, which serve to support the roofs over the vast chambers. I recollect that at one point in the cave one of these columns is of such huge proportions that there is only a narrow passage left on either side of it.

Some of our party became satisfied with their explorations before we had reached the point to which the guides were accustomed to take explorers, and started back without guides. Coming to the large column spoken of, they followed it entirely around, and commenced retracing their steps into the bowels of the mountain, without being aware of the fact.

When the rest of us had completed our explorations, we started out with our guides, but had not gone far before we saw the torches of an approaching party. We could not conceive who these could be, for all of us had come in together, and there were not but ourselves at the entrance when we started in. Very soon we found it was our friends. It took them some time to conceive how they had got where they were. They were sure they had kept straight on for the mouth of the cave, and had gone about far enough to have reached it.

Henry Heth, a member of the party, also mentioned the cave in his memoirs: There was nothing worth mentioning about this cave except its immense size. We were informed that its entirely had never been explored. All caves are pretty much alike; stalagmites and stalactites abound, differing on in the queer shapes, which they assume.

The geologist J Harlen Bretz is known to most cavers mainly as the author of Caves of Missouri *and* Caves of Illinois, *and perhaps for the important 1942 paper, "Vadose and Phreatic Features of Limestone Caverns." He visited the Grutas de Cacahuamilpa and vicinity in the early*

1950s and wrote the paper, "Cavern-Making in a Part of the Mexican Plateau" for the Journal of Geology, *1955, from which the accompanying area map is reprinted.*

The following is from part 1 of his memoirs, Some Recollections of a Geologist on Entering His 90th Year, *informally published in 1972 by the author and the geology department at the University of Chicago.*

This time, when I ventured out of U. S. territory, I took care to have local geologists as part of the group. *Colliers Magazine* wanted a story on cave exploration.

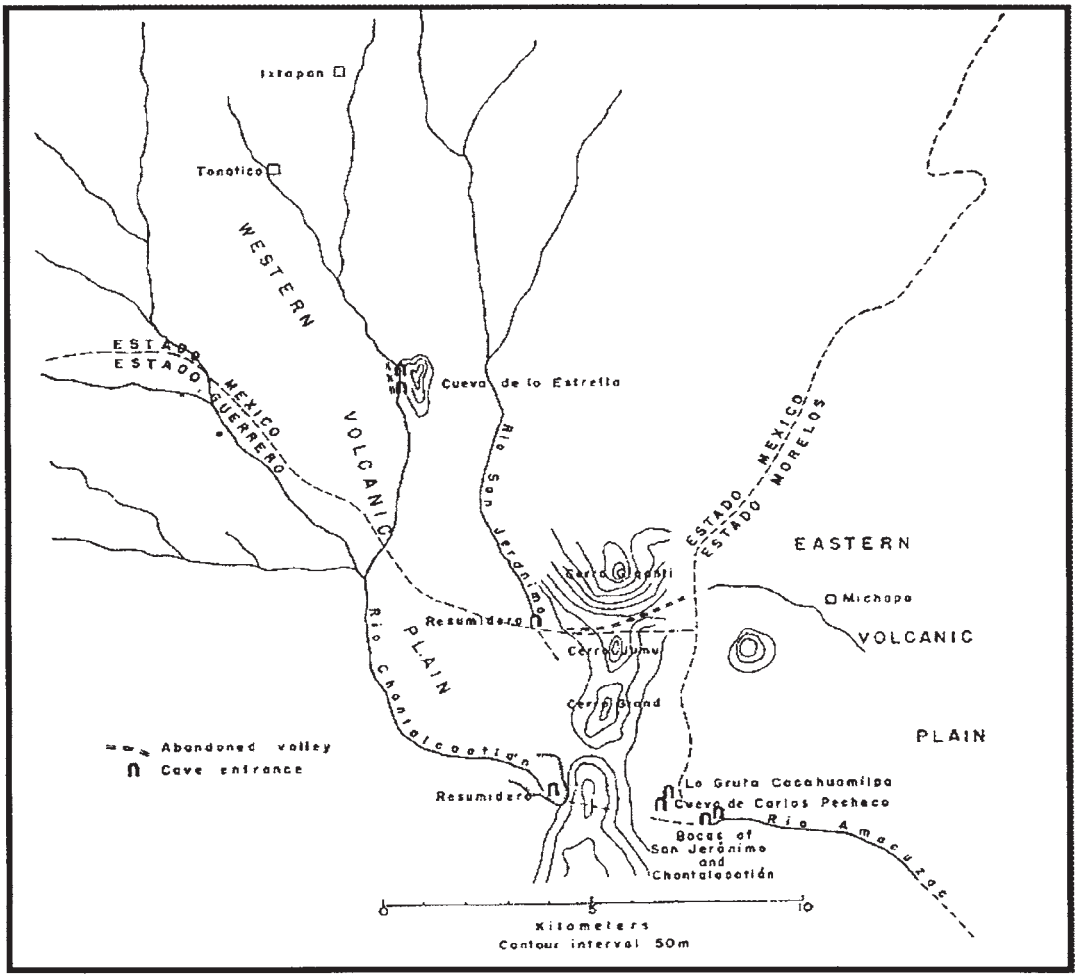
"Yes," I said, "if you will choose a cave I have never seen and the origin of which will involve some new combinations of genetic factors." We settled on La Gruta Cacahuamilpa on the drop off from the Mexican plateau to the lower banana belt country, a cave reputed to possess the largest known rooms of solutional origin and to have had intimate if not contemporaneous relations with volcanic action. The relations did exist, I found, but they were not at all what I had anticipated.

La Gruta Cacahuamilpa is entered not far above flood levels of the deep, narrow valley of Río Amacuzac but was a perfectly dry cavern with no trace of any former vadose stream. It was reported to us as being 100 meters wide and 60 meters high with an explorable length about three times that of Carlsbad and "ending" in a huge, impassible breakdown.

Dripstone aggregates were of dimensions fittingly huge for the immense vertical proportions of the cavern. No branching tributary or distributary system was apparent; it was simply one enormous elongated subterranean room, justifying the local belief that it was the hall of former gods. Despite these magnitudes, it was a real disappointment in its lack of features to record its genesis.

Our attention was drawn irresistibly to two cave mouths almost at the very bottom of the Amacuzac gorge, each discharging almost a tubefull of roaring muddy water, each a subterranean river tributary to and more than doubling the volume of the Amacuzac. Add to that surprise, each was rolling big boulders of *igneous* rock out of the entrance (or exit) of caves in *limestone.* And who had ever seen any cave stream of *muddy* water?

These puzzles were resolvable



only by exploration of the country upstream from the bocas (cave mouths with muddy water filling them) and overlying all caves, wet or dry. It turned out to be a country of little farms on a plain of weathered igneous rock which was interrupted by mountains of limestone rising above the plain. And this plain also was cut by two deep valleys, their rivers flowing toward the outcropping hills and low mountains of limestone.

At approximately the contact of the plain against the higher hill land, each stream plunged into a cave and obviously continued underground to the roaring bocas already seen. We were informed that in extremely dry periods, daring boys had waded and swam the entire subterranean route of each stream. Today the rainy season had begun and each stream just about filled its cave to its ceiling at both bocas (exits) and resumideros (entrances).

The plain of igneous rock was an ancient volcanic mud flow with debris of all sizes. Farm enclosures were walls of boulders available in many places on the surface, carried there floating on the mud flow. But how did those two rivers (San Jerónimo and Chontalcoatlán) ever make their long tunnels through the igneous agglomerate that had filled a former lowland along side of the range of limestone hills which it partially buried?

I found the answer when we descended into the resumidero where the San Jerónimo entered its tunnel. The opening was in *limestone*, a high arched opening at the bottom of the volcanic *agglomerate*, where a cascade over fallen blocks and a sheer plunge out of sight from the outside was sending us a loud roar.

The San Jerónimo had found a tunnel-way cave suited to its gradient already waiting for the river when it had eroded its valley deeply enough down into the agglomerate. A cave of pre-igneous time and suitably oriented had been buried by the volcanic rock.

We bridged the cascade over the welter of boulders and bypassed the 20-foot sheer waterfall to find a fairly capacious cave system older than the igneous filling, the Cueva de la Estrella, only the lowest part of which was used by the San Jerónimo. We explored a fairly extensive cave, entirely empty except for the roaring river below the waterfall, a cave system without a trace of running water of the past, a cave entirely phreatic in origin.

Thus it was clear that originally the water table had been higher in the older limestone than it now was in the agglomerate and the Cave of the Star had been buried by the great mudflow. The Jerónimo or its predecessor had had to begin a new trench and had thus discovered a phreatic cave system already waiting to be used by the vadose water of an entire river.

That river, in going underground, had deepened what it found and had rolled out at the Jerónimo boca the igneous boulders we had already seen. Briefly stated, we also identified the prediscovery course of the Jerónimo and our interpretation was complete and consistent except only for the huge, dry, higher-lying Cacahuamilpa.

For it, we assumed only that in post igneous time, no surface river had happened to cross the course of the buried Cacahuamilpa. Only two (San Jerónimo and Chontalcoatlán) such early post-igneous streams had had that fortune and thus obtained some miles of subterranean routing. No other logical sequence of events seemed possible.

Algunas visitas a Cacahuamilpa, Guerrero.

El General Ulysses S. Grant describió en su diario la visita que realizón en 1848 a las Grutas de Cacahuamilpa, Guerrero. El famoso geólogo J Harlen Bretz discute la geología de las cuevas Dos Bocas en un artículo publicado en 1955 y en sus memorias.

TECOMÁN PROJECT, COLIMA

Peter Ruplinger

It was a super project. In addition to exploring and mapping fourteen pits, we experienced a volcanic eruption, an earthquake, monstrous spiders, and being woken by machine gun wielding police at two in the morning. That's why we went to Mexico. If we wanted something ordinary we would have gone to the Epcot Center.

Preparations began last summer. Peter Sprouse suggested the area to me. He said it was promising and unexplored. The next several months were spent collecting maps, making local contacts and gathering information. Two cavers in Colima, Manuel Gallegos and Mitchell Ventura, were especially helpful.

Manuel scouted around asking locals if they were aware of caves and prepared several excellent maps. He also advised the mayor of Tecomán that we would be in the area and not to worry. Mitchell met us in Colima and showed us an exceptional area close to Colima which we may explore on our next trip.

Other cavers who assisted in preparations were John Pint, an English teacher in Saudi Arabia, and Chris Lloyd, a mining engineer in Guadalajara. Two Utah cavers, Clair Call and Wayne Bodily, generously donated approximately $200 worth of new and used caving equipment to be utilized by Mexican cavers. Ron Bird, a local businessman, donated two large cases of school supplies. Their thoughtful contributions were greatly appreciated.

I made a trip to Tijuana in September to obtain topographic and geological maps, and in October ordered and paid for an additional $50 worth, direct from the Mexican Information Bureau. Four months later, they still haven't arrived.

We all acquired respirators to protect us from histoplasmosis, but caves were so hot (typically 27°C) that we never used them. We would rather get histo than suffocate in the masks. Four weeks after returning, it appeared that none of us have histo symptoms.

The pits we visited were all Cretaceous form in the age when the last of the dinosaurs roamed. The terrain was typical of karst with large boulders protruding above rich sod where decomposing vegetation had eaten away at the surrounding limestone. Often the karst boulders were sharp and spiked, sometimes up to a meter and a half above our heads. In other areas they were smooth domed monoliths.

We were fortunate to have an exceptional team. Our members could be categorized into two groups: the college students, and the geriatrics. Doug Zeddis, my brother Mike Ruplinger, and I are our early fifties.Mike, who had lived in Latin America for over ten years, was a valuable team member.

Doug had extensive experience in search and rescue. He looked like an ex-marine or mercenary and attracted considerable attention at the numerous military check points where counter insurgent forces were searching for arms. They would typically pass me on and detain Doug for a thorough search.

In addition to being an EMT, Shay Lelegren was exceptionally skilled in vertical work. Brandon Kowallis was fluent in Spanish and led us to a promising lead which he heard about near Pátzquaro. His brother Kory, was the youngest member of our team and really fast on rope.

Dave Harris was our biologist. I call him "Mr. Personality." He never complained, was anxious to help, and got along exceptionally well with everyone. Getting there was a long tough drive. We met for breakfast the morning after Christmas and hit the road at 5:30 AM. That was our last American meal for two weeks. Someone suggested that we call our venture the "Taco Man Project."

We crossed the border into Mexico at 7:00 that evening. The Mexican border inspectors were officious and meticulous. My interrogator was a professional young man with horned rimed glasses, and slick black hair. He was dressed in a sleek jet black uniform. I almost expected to see SS lightning bolts on the shoulder.

After studying my passport, birth certificate, and auto registration for over ten minutes, I was coldly informed, "Mr. Ruplinger, I am sorry to inform you that you must return to Utah to obtain your marriage certificate." After considerable persuasion, he finally agreed to let me go.

Once across the border, our first surprise was that gas was $1.65 per gallon, not 80¢ as expected. Next we learned that the numerous toll roads were also pricey, totaling almost $200 per car. At least the hotels were cheap.

Progressing south the terrain became greener. The area around Tepic in Nayarit was plush with sugar cane. Guadalajara was surrounded by rolling brush covered hills and fresh humid air. It reminded me of the foothills that I roamed as a child near San Diego.

As we approached Colima, the setting sun had a dramatic red hue from the ash of erupting Volcán Colima Sur. As we crossed a deep gorge and rounded a bend in the road, we were taken back at the impressive view of the active volcano, and her sleeping sister a short distance to the north. From this spot we couldn't see lava, just a spire of smoke towering into the sky. Later we would get a much closer look.

We arrived at our destination, Tecomán, in the early evening. Manuel had thoughtfully made reservations at motel on the beach. I wasn't happy with it. It was priced right, and the owners were especially nice, but it was rather trashy, had no phone, and was too remote. What bothered me most, were several shameless American tourists who were blatantly smoking pot. We left first thing Tuesday morning. I did not want locals to associate cavers with pot.

Near the center of Tecomán we located an ideal motel. It had a bath with each room, was clean, and priced at just $3.50 per person. Like the other motels the bed was a thin mattress on a concrete slab, and there was no hot water, nor toilet seat. There were no screens either, but a lizard on the ceiling controlled insects.

A lovely white dove sat nesting in the bathroom window. In the center of the hotel a tropical garden was the home to colorful geckos which rested in the palms towering through the roof.

The owner was quite accommodating, perhaps because we were nearly her only guests, or because she found us to be such a curious group. She didn't mind us washing our own clothes and hanging them to dry on the roof and seemed amused when we tied a rope around the water tank, draped it over the roof edge, down into her tropical garden, and then began climbing up and down. "Why don't you use the stairs?" she asked. Perhaps the lizards were equally amused.

A well humored teenage, Javier, was there day and night to accept our payments and, if we reminded him, to provide us with towels. At night he slept on the lobby couch and supposedly kept an eye on the place. Regrettably, we found later, that he was much too deep a sleeper to protect anything.

We didn't waste time in getting started caving. Brandon and Kory left that morning to pick up Shay at the Guadalajara airport. From there they drove to Pátzquaro to check out a lead a farmer had told Brandon about. It turned out to be a good lead in a small area of karst surrounded by lava. The cave was blowing much air, but unfortunately didn't go far.

The rest of our group stayed in Tecomán to check out a pit reported to be about 50m deep with a "lake" at the bottom. So, off we went to find Señor Balleza, the owner. We stopped on the way at a used tire place to buy an inner tube. I suspected we may have needed to do some swimming.

Señor Balleza is a respected and gracious businessman in Tecomán and also the owner of a 2,500 acre ranch. He wasn't at his office when we arrived, but his two poised and attractive young secretaries were able to locate him on the radio. He said he would be there immediately.

While we waited, one of his secretaries cautioned us that the pit, or cenote as they call it, was a frightful and ugly place that we certainly didn't want to enter. "Why don't you nice American boys just go to the beach?" she asked.

As promised, Señor Balleza arrived promptly, and escorted us to his spacious office. The decor was Spanish colonial with an open beamed ceiling and rustic tile floor. Two remarkably realistic paintings of his favorite horses hung beside a photo of his wife.

Señor Balleza pointed to the paintings and commented that the world would be a splendid place if only people were as honest as horses. He seemed really pleased top have cavers from North America visiting. Occasionally, his secretaries would interrupt to say that he had an important phone call, but he would ask them to postpone it. Before we left, he gave us a note to present to his ranch foreman, Octaviano.

It was too late to go caving and too early to return to the hotel, so we took the secretaries advice and went to the beach. It was a beautiful tropic shore. Jet black lava separated coconut graves from the crystal clear water. The sand was coarse and heavy. It felt therapeutic to our tired feet.

The beach was an adventuresome new experience. I've heard about rip tides all my life, but never had the excitement of experiencing one. While our group frolicked in the waves between the shore and the crests, I ventured farther out. Shortly after passing the area where the waves would typically crest, I turned to look back to the shore and saw to my surprise that the palms now appeared miniaturized. I had been swiftly carried perhaps 400 meters out.

Remembering what I had been told about rip tides, I swam up the shore a 100 meters or so and then back to safety. About twenty minutes later the tide ripped me out again. It was now dark. I was a little worried, as were my friends on shore. Without difficulty I swam back as before. Later the hotel manager told us that the beach was notorious for rip tides, and many uninformed people had drowned.

Wednesday morning we re turned to Señor Balleza's ranch. We envisioned finding the ranch manager residing in a lovely adobe cottage beside a sprawling colonial hacienda. To our surprise, we found that Octaviano resided with his wife and 15 year old son, José, in the most humble of abodes, a simple shack of sticks with a corrugated metal roof. Octaviano wasn't there. José said he would lead us to the pit.

José was a handsome but sadly solemn young man. He said he not

like living on the ranch and was otherwise rather quiet. He did, however seem especially proud of and devoted to a well groomed and trained horse. We didn't see many horses. Most people had burrows. José said it belonged to Señor Balleza. He was obviously very proud to ride and care for it. Later he became a little more talkative and was quite pleased to have me take his photo with the horse.

We would never have found the pit without José's assistance. It was far into the mountains on a road that was almost completely overgrown. In route, Mike's truck became hung up on the only large rock in the road and hopelessly stuck. As he struggled with a block and tackle to free it, several Brahma bulls slowly ventured near to take a curious look at the intruder.

Mike was becoming somewhat frustrated. Finally I took a ballpeen hammer from his tool chest and crawled under the truck. With just a few hard blows, the rock crumbled and the truck was free.

The pit lay in the bottom of a canyon, surrounded by thick vegetation. It was about 7 by 20m wide at the opening and then funneled down to about 3 by 3m. We were told that during the rainy season the pit would fill entirely with water, and during the dry season a lake at the bottom provided a never ending source of water.

Several years previously they had used two pumps to supply water to melon fields in the valley below. When the melon contract ended, the pumps were removed.

Directly above the pit hung a large wasp nest. The locals referred to this type of wasp as "Avispa Borracha" or "Drunken Wasp." Several farmers informed us—with all sobriety—that when stung, the victim would fall into a drunken stupor and stumble around aimlessly as his throat swelled until he choked to death. There was, however, a simple remedy: "Throw a jug of water into the victim's face, and he will quickly recover!" This bizarre reaction and antidote was repeated to us so many times that I'm inclined to believe it.

Doug tied off our 90m rope to a tree and as Doug was about to descend, we heard a vehicle crashing through the brush towards us. It was a truck with eight angry farmers. They had heard that we planned to descend into the cenote and wanted to know what we were up to.

Tindarapo (tailless whip scorpion). *Brandon Kowallis.*

Like most Mexicans, they found it incredible that anyone would travel to a distant land and go down a pit just for the fun of it. They seemed certain that we were looking for treasure. After explaining to them that we were members of a national caving club, and simply wanted to take photos and make a map, they quieted down. After allowing me to take a group photo, they went happily on their way.

Dave was all excited and wanted to be first down the pit. Halfway down he had a sudden change of attitude. "Oh my gosh! This is the biggest spider I've ever seen!" he shouted up to us. I suspected he was talking about a harvestman or tarantula, until he said it was over a foot across, and had huge pinchers. This was really puzzling.

"Could it be a fresh water crab?" I wondered. A few minutes later Dave was at the bottom. He was clearly frightened, "The spiders are everywhere! They're over two feet across! I'm coming back up right now!" I think he made it back to the surface in record time.

On top he told us more about the spiders and how they seemed to sneak up on him when he wasn't looking. I was anxious to see for myself. I put on my ascending equipment first. I didn't want to be fumbling around with chest harness and stirrups in the pit if giant spiders were sneaking up on me.

I didn't bother with my respirator. I was afraid that I couldn't tell if something on the back of my neck was a spider or an elastic strap. I didn't take my back pack for the same reason. All I took was my camera and a club.

Doug scolded, "You're not suppose to kill anything but *time* in a cave!" I responded, "If dozens of giant spiders are ambushing me, I'm going to start swinging! Sorry!"

Halfway down the pit I realized that Dave was not exaggerating. Hidden in a crack was a monster of a spider. Yes, it did indeed have seven centimeter mandibles with sharp protruding spikes, and legs perhaps fifteen centimeters long. When I reached the bottom there were many more, and they were even bigger. I estimated that the largest creatures had legs close to thirty centimeters long.

I suspected that they were not true spiders, but they definitely had eight legs. Sharp spikes protruded on their inward edges. Between the pinchers were two black appurtenances which looked like fangs. I

couldn't tell for certain. I could see nothing resembling eyes. They were, as near as I could tell, completely blind.

They moved slowly from spot to spot and didn't seem to notice when I shined my bright headlamp on them. They were definitely not "sneaking up" on me. I felt quite comfortable in their midst. Once when I approached within a few inches to take a close-up photo, the creature became alarmed and quickly ran away. I suspect it sensed the heat from my lamp.

It ran to the area of another arachnid which immediately engaged it in battle. They waved their claws frightfully at each other, until the trespasser retreated. I noticed that none of the numerous creatures were within a meter of each other. They are clearly territorial. I noticed that one down near the water had wet feet. Perhaps they are somewhat aquatic, or at least venture into shallow water in search of food.

Upon our return to the states, I inquired with the University of Guadalajara as to what these creatures were. I received a reply the next day. Biologist, Hugo Fierro Lopez, said that what I saw belongs to four genus of the *phrynidae* family of the *amblypygi* order. There are fourteen known species in Mexico.

In America we call them tailless whip scorpions. They are not scorpions any more than they are spiders. He said that most species dwell on the surface, but a few are troglobites.

The bottom of the pit was an L-shaped water filled room about five by twelve meters. There was only a small area to stand while off rope, and it was difficult to get to. Once off rope, I yelled to Doug, and he came down. While I was waiting for Doug, I worked my way over to look around the comer.

Regrettably, the room didn't go further. At the far end, the crystal clear water was as deep as I could see, at least six meters. It would be a fun and possibly rewarding dive for a SCUBA team to push.

Before the farmers departed, we had a lengthy discussion as to what the cave's name was. All the farmers agreed that it had no name. Everyone just referred to it as "El Cenote," or "the spring." Later, we learned that the locals have a name for large spider like creatures. It is "Tindarapo." Consequently, we chose to call the cave Cenote de los Tindarapos.

We left early Thursday for the town of San Gabriel. We had heard from both Manuel Gallegos and Chris Lloyd that there were caves there. It was a beautiful drive. The road from the valley floor to the mountain tops was paved entirely with cobblestones. Plush vegetation lined each side.

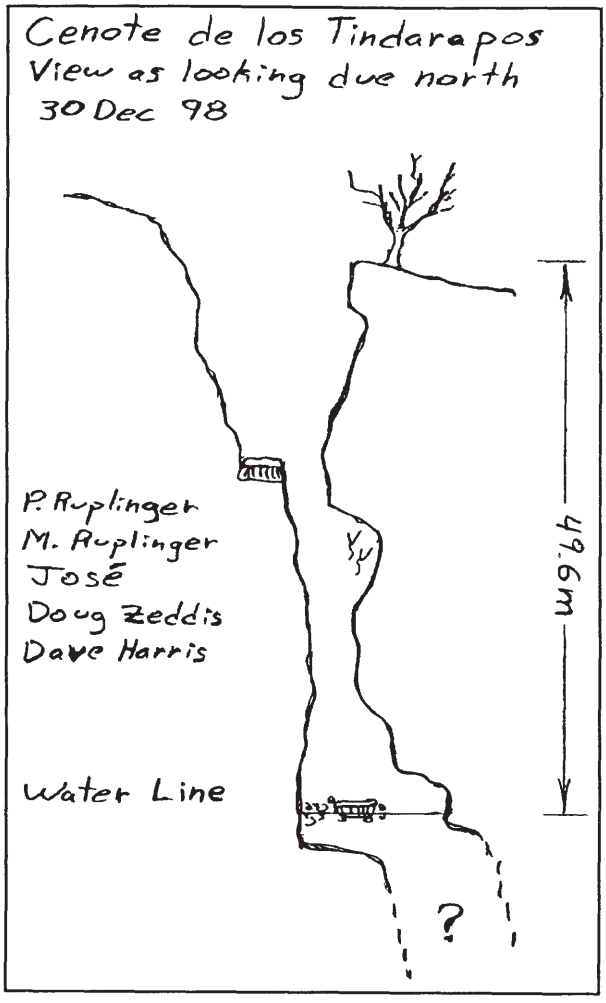
We arrived at San Gabriel to find a town of approximately fifteen homes and a one room school. It was a small room at that, but very neat and well kept. Most of the homes were bordered with colorful bougainvilleas.

In the center of town one wooden bench sat beneath an incredibly large tree. This was the plaza. Charming children with huge brown eyes and big smiles played with a turtle. Young men were approaching with rifles. They had been hunting iguanas. It was plain to see that they were disappointed with the hunt.

Near the plaza we found the home of Ignacio Denis Verdusco. San Gabriel wasn't large enough to have its own municipal president, but Ignacio represented the community in the council. We wanted him to know what we were doing so that there would be no confusion or rumors. Ignacio was pleased to have us there.

He proudly announced that just a few weeks ago, San Gabriel had become somewhat of a tourist attraction with their own special cave. The government had assisted them in installing a twenty meter spiral staircase to the bottom of a pit which reportedly led to a large room filled with impressive formations. The cave was called "Gruta de la Higuera," or "Fig Tree Cave," because of the large wild fig tree growing near its opening. The roots of which descended the pit wall, and could be climbed down by the more agile city residents.

We walked with Ignacio to the pit. It was just as he described. At the bottom a small passage led to a room approximately 10m by 20m with spectacular draperies on most walls. Even a few shields on one wall. The room had apparently been used as a water source by prior civilizations. According to



Ignacio, the stone stairs and small retaining wall near the lower portion of the room were built by pre-Colombians.

We asked Ignacio and other locals if any other caving teams had visited their community. They assured us that with the exception of a lone Frenchman, no cavers had ventured into the pits. They added with disgust, that the Frenchman only went into the tourist cave, where he scratched his name on the wall. "Is that what they call a 'spelunker'?"

Ignacio and his neighbor, Antonio Paredes Ramos, were pleased to show us eight other pits in the area. They were exceptionally gracious, refusing to accept payment for their assistance, but pleased to accept small gifts. I brought along Swiss Army knives, and school supplies just for this purpose.

We suspect six, possibly seven, of the pits to have been virgin. None of them had impressive formations or cultural artifacts. Most of them had bad air. Most had large bats, but little guano. Two of them deserve further exploration. There are at least three more pits in the immediate area which we hope to explore on our next trip.

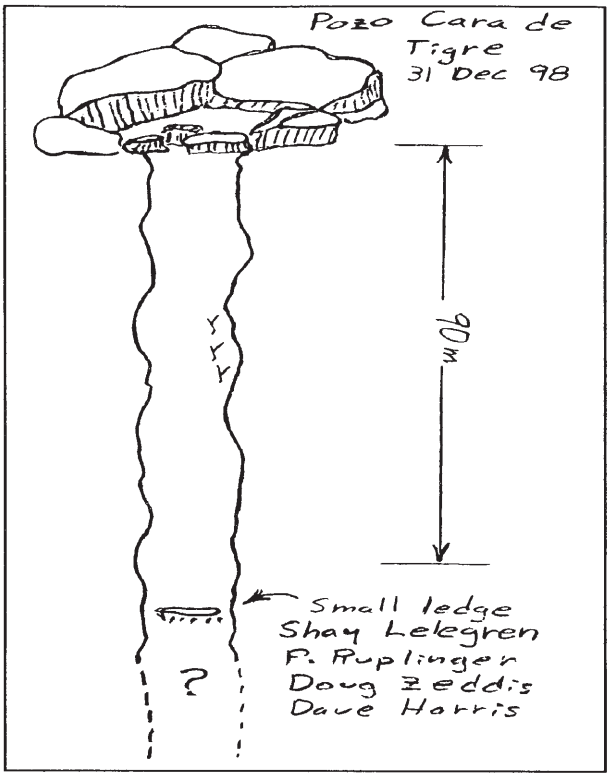
One of the most promising pits is Cara de Tigre. Ignacio took us to it on the first day. The entrance looks like a small shelter, on an exotic planet. It is nestled among sharp spiky karst rocks and tropical plants with snake like stems. The locals call the plants "Cara de Tigre" or Tiger Face. We know them as *Philodendron sellourn.*

Outside the shelter we found the remains of a clay water jug. If we had a team archeologist, I suspect he would have precisely pinpointed the jug's age as "possibly over forty years old, but doubtfully over two thousand years old."

In the floor of the shelter, we found two small passages which led to a huge pit almost as big in diameter as the entire shelter. A lot of air was blowing up the pit. Shay tied off a 90m rope and went down the full length its knotted end. It wasn't an ordinary 90m drop—it was extremely hot!

Shay had a few minor mechanical problems, and of all places, had to change his head lamp bulb. It took him quite a while to get back up, and he definitely didn't want to go down again. With his exceptionally bright head lamp, be was not able to see the bottom, so it must go down at least another twenty meters. On our next trip we will take a 150m or longer rope.

Ignacio Sr. in Gruta de la Higuera. *Peter Ruplinger.*

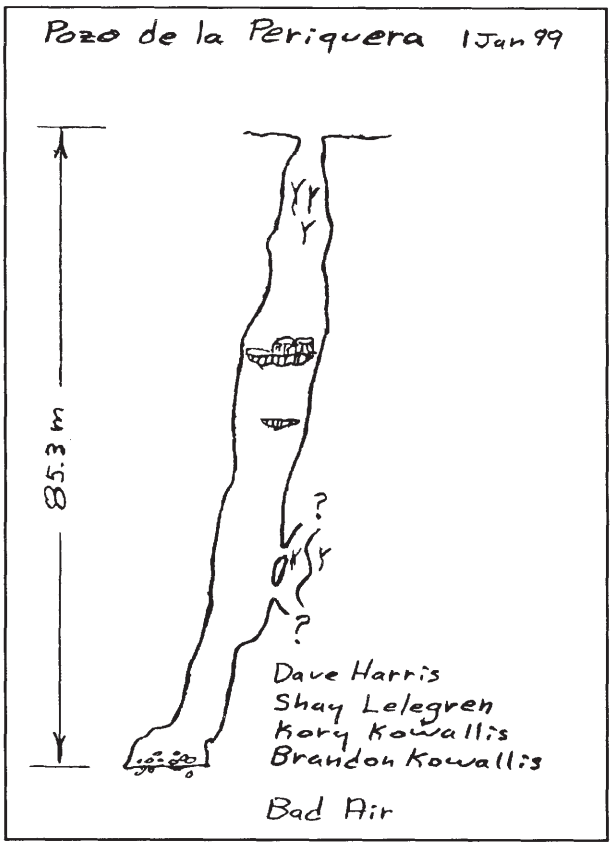


Just twenty meters or so east of Cara de Tigre is a pit which looked promising, but was only about 7m deep. Its opening looks like a giant scorpion hole, so we call it Pozo del Alacran. Incidentally, in the summer months scorpions are abundant. Their sting has killed children in the community.

Another pit which I wanted to explore further, but just didn't have the time is a few meters south of Higuera. Brandon, Kory, and Doug visited it while Shay, Dave and I were at Cara de Tigre. Like Higuera, it went down twenty meters and had small side passages. Brandon reported that as he peered into a passage, he was met by more than one large, black, harry and frightful tarantula. This made the tight crawl very distasteful.

Friday, Shay, Kory, Michael and Brandon went with Ignacio Sr. to the site of an exceptionally deep pit. The air was bad, and they didn't like it at all. Like most pits in the area, mapping was easy, just one shot, straight down. The depth was 85.3 meters.

At the bottom, all were breathing about three times the normal rate and anxious to get out. Other than draperies along the sides, the



pit had no notable formations. Near the entrance was a four foot high termite nest, so the pit was named Pozo de la Periguera.

Doug and I spent Friday morning hiking back to Pozo Cara de Tigre to de-rig. In the afternoon Ignacio Jr. took us to another pit. It was wide, but only 14m deep. Junior watched with captivation as Doug gracefully rappelled down into the pit. He wanted to do it too, but just hand over hand. After much discussion, I convinced him that it wouldn't be safe unless he was in a seat harness, and using a rack.

He ended up using my rack to go down, and rope walker to come back up, and thought it was super. In the pit, Doug found a small turtle. It looked like a female false map variety to me, but didn't have the typical dorsal spikes.

Saturday we drove to Colima where we met Mitchell Ventura. Mitchell is a man of many talents. He is studying forensics science and Italian at the Colima University, works for the fire department, and manages the export department for a coconut processor. Just for fun he caves, and occasionally teaches classes on vertical technique to rescue workers. He was accompanied by one of his students, Carmen.

We drove from Colima to the Cerro Grande region. Cerro Grande is noted for numerous deep pits. In the early '80s, the distinguished Mexican geologist and caver, Carlos Lascano Sahagun, found 79 pits, and mapped all but 15 of them. The deepest, Resumidero del Pozo Blanco descends 233m. Lascano explored only the western portion of the region. We planned to take a cursory look at just the east portion.

As we began our climb into the mountains, shifting became increasingly difficult. I just couldn't find the gears. At first I thought it was because of Carmen's wide hips which were somewhat in the way. Finally I realized that the clutch was going out. With Mike and Doug's help, and a little time under the truck, we were soon off again. The roads were really bad, but finally we made it to the one home town of Picacho on the east ridge of Cerro Grande.

As we approached the ridge we were confronted by the impressive view of erupting Colima Sur, just seven kilometers to our east. We couldn't see flowing lava, but at regular intervals we would see an immense puff of ash as a landslide cascaded down the hill. After dark, on our way home, we could see flowing lava, and the occasional fireworks display as a boulder, perhaps as large as a house, would be thrown out of the volcano and burst into radiant pieces as it hit the ground below.

The one humble home in Picacho was occupied by Magdaleno Contreras, a friendly farmer, who was pleased to tell us where to look for pits on his property. Like many Mexicans, Magdaleno bad worked a few years in the states, but returned to Mexico. He labored in central California cultivating hops, and spoke a little English.

Off we went on a trail which led a few kilometers down the hill to a polje-like basin with a small cornfield. On the way, we met Magdaleno's daughter who was leading two borrows up the trail. They were loaded with large bags of corn. On the east side of the basin were two pits, only 5m or so deep. Both looked like they might go further, with a little digging.

As I foresaw, just a little further to the west was another basin. It had a cornfield also. Kory, Brandon, and Shay were quick to scout the perimeter, and found a large and promising pit. It was 25m deep and approximately 13m wide. On the far side there was a large passage which regrettably went nowhere. So, after spending our entire morning driving, and spending the entire afternoon hiking to find three insignificant pits, we started back.

Higher up on the east ridge there were obviously more pits. From the road we could see several. It was beginning to get dark, so we didn't have much time, but in just a few minutes ridgewalking we found an immense pit. It was approximately 4m wide and from the sound of falling rocks at least a 100m deep. This will be one of our first pits to map on a future trip. It is possible that the pit has been previously entered.

On the rough dirt road just 70 meters south of the pit is a small shrine of San Rafael. Mexicans typically erect such a shrine at the site of a fatal accident. It is possible that someone fell into the pit, or perhaps there was an auto accident at that spot. I suspect the locals know. We tentatively call this pit Pozo de San Rafael.

Our Sunday wake-up call was a small earthquake. Brandon

took the hint, and suggested that instead of caving we go to church. Mike, Dave, and I visited the Mormon church. It was a lovely little chapel with a large well kept lawn in front, and a basketball court in back. The members were exceptionally friendly and pleased to have us visit.

Shortly after the service began a large man with a bright purple sweatshirt entered the chapel. His shirt was silk screened in English, "Behind every great woman is herself." He was obviously intoxicated but enthusiastically announced that be had just overcome his drinking problem, and wanted to join the church.

He then pulled a piece of electrical conduit from his pocket. It had been fashioned into a flute. He offered to accompany the congregation's singing. Not surprisingly, no one encouraged him.

Later in the day I visited the Catholic church. I love old colonial churches. Regrettably, one was not to be found in Tecomán. They have a large church of incredibly mundane architecture just eleven years old. Its only notable features are the three meter high double doors and pews which are fashioned of beautifully polished solid walnut.

The doors have sixteen carved panels depicting the life of Christ. The church appears to have run out of funds before construction was complete. Its towers barely extend above the roof. The crossover, has an abundance of bells which occasionally clang out lively melodies, but regrettably begin banging each morning at 4:00. They sound much like someone cleaning out a trash can.

Despite the mundane building, I was touched with the devotion of the parishioners. They began filing in long before mass began. Surprisingly there were more men that women, and numerous family groups. Many devoted worshipers crawled on their knees up the fifty meter tile aisle to the altar.

A teenage girl enthusiastically sprinted on her knees all the way to the front and then back again. It occurred to me that she would make a super caver. By the time mass was about to begin, the chapel was filled to over capacity. Neatly dressed young families were on all sides. A toddler on the pew directly ahead turned around to laugh as I made funny faces.

During the mass I learned that it was the Festival of the Three Magi. Usually celebrated on January 6th, but mass honored on the closest Sunday. As soon as mass was over, a new group of young families began filing in for a second mass.

Early Monday morning we were again awaken by a surprise. At 2:30, two policemen with machine guns came to Doug's door. Not a pleasant way to greet the morning! They announced that his car had been broken into. The hotel manger, Javier, who was suppose to keep an eye on things slept through the entire event. Naturally, this was disheartening news, but all worked out well.

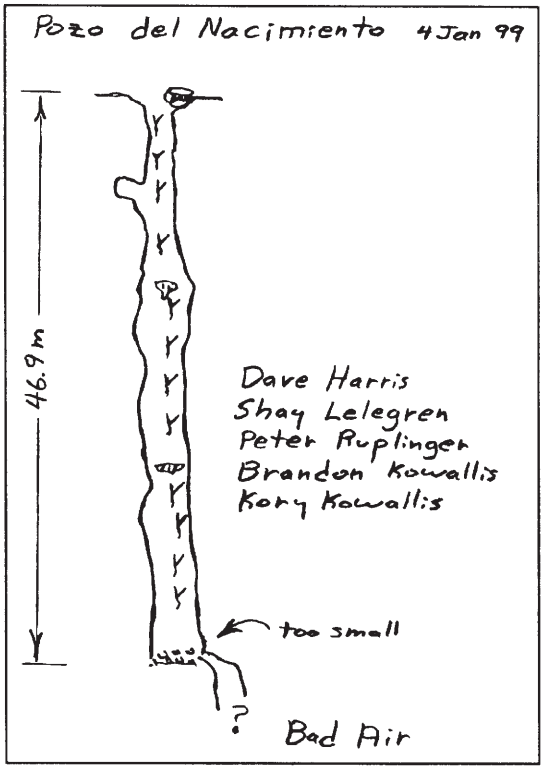
The three smash and grab thieves were apprehended a few minutes later. Mike, Doug and I had to go to the police station and fill out voluminous forms, but everyone was helpful. We were asked to return again at 9:00 in the morning. As we approached the police station, perhaps ten to fifteen blue uniformed men were waving and whistling at us.

"How nice," we thought, "the police are all so happy to see us." Strangely, they didn't look happy. Then we realized that we were driving the wrong way on a one-way street. Once again we each filled out voluminous forms. Tuesday morning we had to return for the third time to fill out more forms, but we returned with all our stolen belongings. Mike and Doug drove to Colima that day and got the window replaced for just $55.00.

After the forms, we headed back to San Gabriel. Antonio took us to a pit on his property. It was 46.9 m deep. Like the others, it had draperies on the walls, and bad air in the bottom. A passage led off from the bottom to another pit, but it was much too small to enter, and I don't think anyone would want to dig because of the bad air.

I didn't feel uncomfortable or weak at the bottom, but I did have to breath about three times faster than at the top. Approximately 4 meters down from the entrance was a small side passage with an alter like depression in the wall, and four stalagmites which had a resemblance to a nativity scene with Joseph, Mary, the infant Jesus, and a shepherd. Shay crawled into the passage and found that it did not go further. We named the pit Pozo del Nacimiento. Antonio appeared to be especially pleased with our exploration and name.

Tuesday Ignacio Sr. took us to two more pits. It was a arduous hike to get there through shoulder high grass infested with body snatching thorn bushes. They would literally grab us. It was quite difficult to get loose. The small thorns would penetrate our skin and break off to fester for days. The first cave had a small opening,



only about forty centimeters across. No one volunteered to go down, so I went.

Just down about 8 meters my cigarette lighter wouldn't ignite. At about 12 meters the air felt heavy. I was having to breath three times as fast. The pit was only 19.5m deep. I noticed that everything in it was dead, so we call it Pozo de la Muerte.

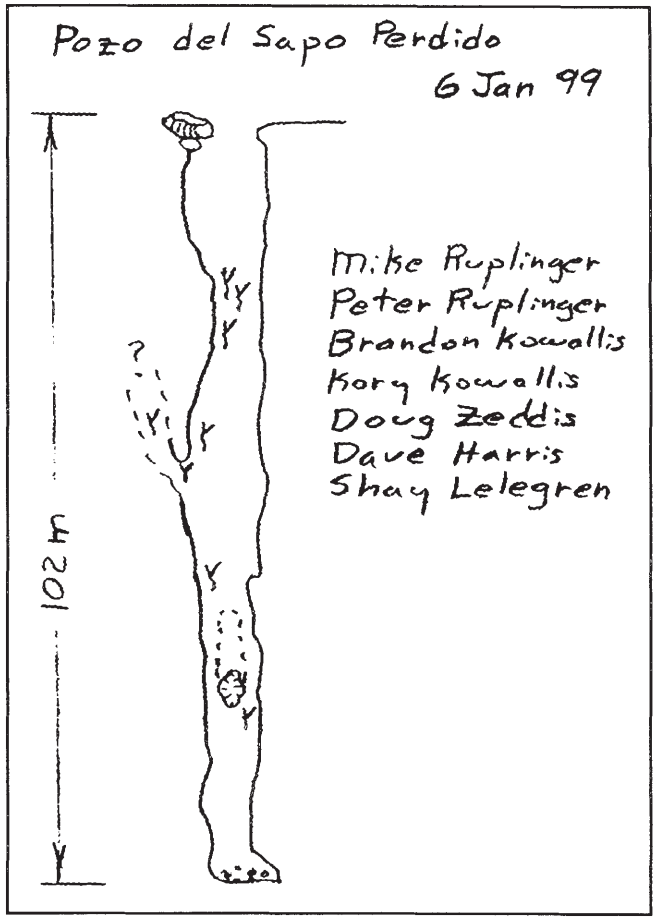
Ignacio then took us to another pit not far away. It was really big, about 10 meters across and from the sounds of falling rocks, obviously deep. Brandon went down first, and reached the end of our 90m rope. We pulled it back up and tied a 30m rope to its end.

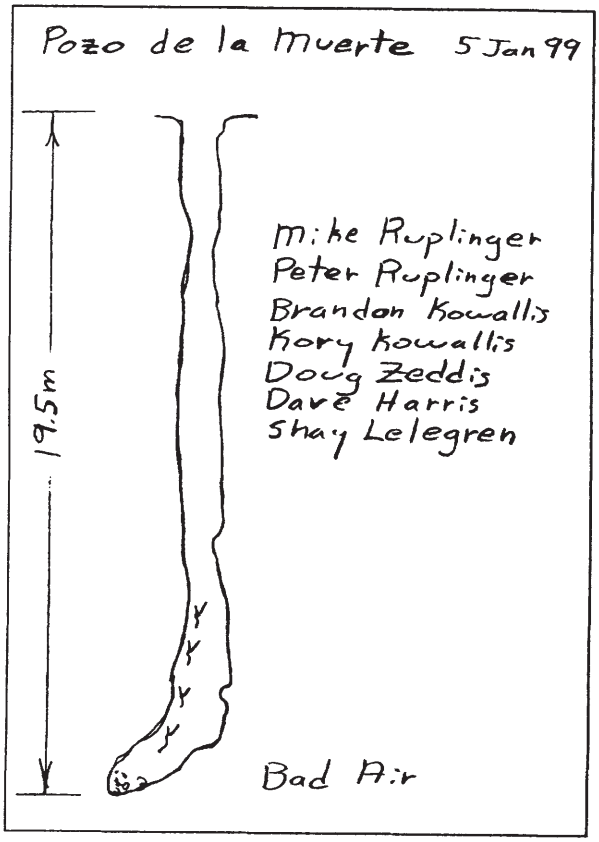
At my suggestion, before descending, we all practiced passing knots with the rope hanging in a tree. While we were practicing a bee stung Dave on the ear, which brought him to his knees in pain. Fortunately the pain, although intense, was short lived.

Kory went down the pit next, followed by Dave, Brandon, and Shay. The pit was 102m deep. There are a few columns and stalactites and numerous draperies. Two side passages remain to be explored. Fortunately the air is okay. A large toad had somehow found his home in the bottom, so at Brandon's suggestion, we named the pit, Pozo del Sapo Perdido.

Our adventure was near its end. It was a super trip. There remains much to be mapped on our next visit. We will probably finish up in San Gabriel and then check out a few caves to the east. Next we will check out an area to the south which may be even more rewarding. Then I'd like to go back to the east ridge area of Cerro Grande and map some of the really deep pits.

Our next trip may be as soon as Easter, 1999.





Proyecto Tecomán, Colima

Algunos espeleólogos exploraron varios tiros en las cercanías de Tecomán, Colima. En el Cenote de Tindarapos se encontró un gran número de amblipígidos y un lago en el fondo con buenas posibilidades para ser buceado. La mayoría de los pozos visitados se encuentran cerca de la pequeña comunidad de San Gabriel. El más profundo de ellos, Pozo del Sapo Perdido, tiene una profundidad de 102 metros. Los tiros no tienen muchas formaciones y algunos tienen altas concentraciones de bióxido de carbono en la sima.

New Explorations in the State of Hidalgo

David Cole

Over the Christmas Holidays of 1998, a small crew consisting of Gerald Moni (TN), David Cole (TN), and Aaron Atz (IN) headed south in hopes of finding the ever-elusive Big One.

We headed first to the village of Joya de Salas in Tamaulipas to wrap up a series of recent trips there. We checked one last sink spotted from the air, which didn't go. Next, we drove into the village itself and asked if they knew of any caves other than the large pit entrance to the well-known cave, Joya de Salas.

We were guided to a number of small caves, but most did not even qualify. Those which did qualify included 40m long Cueva de Carmen, a horizontal cave 150 meters above the village. The entrance was 6 by 6m, and provided a scenic view of the corn fields below.

We then explored the 135m long, Cueva de los Leones, a cave just outside the village, and at the valley floor. A colony of vampire bats were noted above an in-cave 11m pit, with a significant amount of bloody guano below.

That night, Aaron and I toured the first two deep pits in Joya de Salas. We couldn't find anyone who knew of more caves, so we decided to head to another area of Mexico.

The next morning we got up and decided to drive eight hours to the south. We went to Cuesta Colorada, a small town on the Inner-American Highway in the northern part of Hidalgo.

George Veni had turned in about ten pits there fifteen years ago, but cavers had not spent much time in the area at all. We drove through the night to get there, an adventure in itself through dense fog. The visibility was down to about two meters for much of the drive. As a passenger, I just kept my eyes closed and fingers crossed.

The author at the top of Sótano La Palmilla.

We decided to look for caves just north of Pinalito, further down the highway. After talking to a number of people, we got the idea that there are pits everywhere. We first went to Sótano de Ramos, a nice 43m pit with bad air.

Then we hiked off the mountain and went to a 28m pit, Sótano del Alambre, right next to a cornfield. We got another guide and were taken to a very nice 50m pit, Sótano de las Aguilas. The entrance belled out into a 25m-diameter formation chamber.

That night, we explored a pit that drains a very large arroyo. This 24m pit, Sótano del Savila, was unfortunately filled with trash at the bottom. We would end up camping by the pit for much of the trip.

Early next morning, while Aaron was piddling at the truck, Gerald and I went caving. A man took us to nearby Sótano de Tanque, a nice 38m pit, with a natural bridge.

We then went back across Hwy 85 to an area we had previously visited. We hiked 125 meters up to Sótano del Chilar, a 43m pit. Our guide could not find the main objective, a deep pit that supposedly took water.

We soon found Sótano Pequeno, a 16m pit. A rock dislodged as I climbed out of this one, hitting me on the shin and filling my rubber Bata boot with some blood. Next Gerald and I walked down to the

valley floor to Sótano del Mal Olor. A 23m pit that smelled like I was exploring a tuna packaging plant, the horror!

On Christmas day, we headed to a new area a few kilometers away. I was delighted to rappel down into a 32m shaft to find a fat, bloated Christmas pig. We called this Hoyo Indecente.

We were then guided to a nice cave 300 meters below a small village, north towards the Río Moctezuma and the Xilitla Plateau. This 110m long cave, Cueva Morelos, had a 10m wide entrance overlooking the river, over 1,000 meters below. We were hoping to emerge in this river after exploring to the bottom of this cave. An in-cave 14-meter pit led to another room with a fair-sized vampire bat colony.

That evening, we were taken to another pit, Sótano de las Enramadas, a nice 34m pit.

Early the next morning, we were taken back to the same area, and went to Sótano del Lorensillo, a 14m pit. We picked up a previous guide and went to a very nice bell-shaped pit, Sótano del Lorensillo. The 8m diameter entrance dropped 65 meters into a 40m-diameter chamber.

On the way back we found Cueva de Aguilas, a tight 23m pit that had to be earned, and Sótano de Glietz, a 17m pit.

That night, when driving back to our camp, we came upon a man lying in the middle of the road who did not move, and was unconscious. Upon closer inspection, we speculated he was dead—the puddle of blood was a big clue, so we drove around him and onward. Just another part of a grand Mexican caving adventure.

By now we figured the odds were in our favor for a big one. The next day a former guide took us to a new area to some pits he said were "¡Muy, muy, profundo!" We arrived at the first pit, which he said was not the deepest one he was going to take us to.

The 75m-rope we had didn't come close to reaching the bottom, so we would return to this one the next day. Blackness beckoned below. So we pushed on, and climbed over a mountain to Sótano de Muytimes, a nice 43m pit.

The next day we returned to the deep pit, carrying 275m of rope up the mountain—we brought extra so we wouldn't waste time returning for more. We called this pit Sótano La Palmilla. The 2.5m wide entrance dropped free, 146m as a beautiful, big rifle barrel shaft. A colony of bats were roosting five meters below the lip.

After we did this pit, we walked 15 meters over and found another pit, the 34m deep Sótano de Chaves. I also explored Sótano de la Roca, a 23m pit above Chaves.

The next day the same man took us to a number of smaller pits and one cave, including 12m deep Sótano del Carvonera, 18m deep Sótano del Difuntas, 50m long Cueva de Puerto Deltoro, 21m deep Sótano del Angelito, and a 12m pit Sótano de Nevro.

We went to another area, further down the same dirt road, overlooking the Río Moctezuma. A tienda worker took us to Sótano de Morelos, a spectacular, open-air 40m pit, littered with formations at the bottom. We then hiked to a cave that was in a scenic 100m wide, 50m deep sinkhole. It processes a lot of water, but Sótano de Aibino ended after 50m.

The next morning we continued the onslaught of "quota caving." We went to a village called El Sótano, southeast of our camping spot. After I knocked the hell out of Gerald's bumper, we hiked to Sótano de Gualut, which was a decent 31m drop, but it had bad air. Gerald's notes read, "This pit ~~fucking sucks~~," written by Aaron, but crossed out by Gerald.

Our guide took us to two other caves at the valley floor: 20m long Cueva de Ariosto, and 50m long Cueva de Magorga—a fun, 43m deep tubular climbdown cave.

We then went to Sótano de Paila, a 64m pit turned in by George Veni, but not explored by him. Driving back to the village of El Sótano, I climbed down into a sink and found a nice, in-cave, 36m pit, Cueva del Tanque.

We continued our explorations in this interesting area the next day. We decided to ridgewalk on our own and found Sótano del Huizache, Sótano de Canales, two nondescript short pits, and Sótano del Rodada, a nice 8m diameter shaft that was 35m deep.

I found a man chopping wood in the woods, and he took me to a deep pit. I quickly concluded I didn't have enough rope, so I hiked to the truck for more. At 104m deep, Rojo Profundo was an unexpectedly deep pit formed in a rift. That night, while pulling out from a restaurant, I accidentally ran right into Aaron.

The following day, another young man took us 200 meters up a mountain above the village of El Sótano. We explored 19m deep Sótano de Maxorga, and 18m deep Sótano de Zacatito, two more nerd holes.

Then we went to Sótano del Alanito, a 54m deep, rifle barrel shaft with very bad air. Nearby was yet another deep pit, for which we realized once again that we didn't have enough rope. We bottomed the 105m deep Sótano de Molina early the next morning. It had a great deal of guano in the lower half of the pit.

The next day, before heading back to the states, we did a little ridgewalking around Rojo Profundo. We explored three more pits in the 20m range: Sótano de Hebilla, Sótano del Ebanos, and a pit hammered open, Sótano de Tepetare.

I thoroughly enjoyed the trip. Every day was exciting, and full of adrenaline. As I write this report (3-99), Gerald has returned from this same area with a much larger crew of cavers, having explored 96 new caves, including 31 pits at least 30 meters deep. With any luck, we will find some deep caves, not just pits, here.

Caves Found in the Jacala Area of Hidalgo

December 1998/January 1999
Compiled by Gerald Moni
(total length, total depth, pits in meters)

C de las Aguilas	3	26	23	C del Magorga	50	43	7
S de las Aguilas	40	66	50,14	S de Maxorga	5	19	19
S de Aibino	50	23	10	S del Molina	15	105	105
S del Alambre	5	28	28	C de Morelos	110	44	14
S del Alanito	18	55	54	S de Morelos	30	46	40
S del Angelito	10	24	21	S de Muytimes	15	42	41
C de Ariosto	20	17	6	S de Nevro	20	20	12
S de Aymando	5	17	12,5	S del Mal Olor	60	53	23
S de Canales	6	16	15	S La Palmilla	35	158	146
S del Carvonera	20	20	12	S Pequeno	4	17	16
S de Chaves	12	34	34	C de Puerto Deltoro	50	25	-
S de Chillar	2	43	43	S de Puerto Torrea	10	20	14
S del Difuntas	6	19	18	S de Ramos	6	43	43
S del Ebanos	6	27	27	S de la Roca	8	23	23
S de las Enramadas	21	35	34	S del Rodada	10	36	35
S de Gualut	4	32	31	Rojo Profundo	40	112	104
S de la Hebilla	4	21	21	S del Savila	10	25	24
Hoyo Indecente	5	32	28	C del Tanque	8	41	36
S del Huizache	10	25	24	S del Tanque	8	40	38
S de Glietz	5	19	17	S de Tepetare	2	20	20
S del Lorensillo	40	77	65	S de Zacatito	8	18	18

Nuevas exploraciones en Hidalgo

Durante las vacaciones de Navidad de 1998, después de un viaje corto para visitar la Joya de Salas, Tamaulipas, los espeleólogos buscaron nuevas entradas a cuevas cerca de Jacala, en el norte del estado de Hidalgo. Durante esta búsqueda se encontraron 42 nuevos sótanos y cuevas con la ayuda de guías locales. La mayoría de estos son pequeños pero el Sótano de Molina, el Sótano La Palmilla y el Sótano Rojo Profundo tienen tiros de más de 100 metros de profundidad.

BOREHOLES AND ZAPATISTAS: CHIAPAS 1998

Taco Van Ieperen

As our truck rounded the corner, I knew that we were in trouble. Illuminated in our headlights were several men in black ski masks. They had guns. This was not the local welcome wagon.

We had gotten into the situation innocently enough. After four years of explorations in Soconusco and Arroyo Grande, Chiapas, our work was nearly done. The glory days of surveying huge passages until we were exhausted were over. Sure, there were still a lot of leads, but there was a general impression that the major discoveries had been made.

This was going to be the wrap-up year. We would finish some of the remaining leads, try to connect the two main systems, and then do a little scouting in some extremely promising areas nearby. It had been three years since the Zapatista rebellion, and we felt that the political situation was finally stable enough to allow us to go into the remote mountain areas safely.

In Mexico, however, plans can change rapidly. Mere weeks before we arrived, forty-five people near the village of Chenalho were massacred, right in the heart of Chiapas cave country. Tensions were at an all-time high. This was not the year to be wandering in the bush. So we headed across the mountain to the cavers' hut that we all know and love.

The expedition consisted of Canadians, B.C. caver Kirk Stafford and me, six Americans from the Cheve expedition, and four Italians. Our hosts, as usual, were Ruben and Michelle Comstock, who are instrumental in making caving in the area possible. My thanks go out to both of them for all of their help.

The first day saw two teams heading into Aire Fresco, the main resurgence cave, and one team heading to Soconusco to check out a going borehole. Matt Oliphant, Michelle Comstock, and Nancy Pistole were off to an extremely promising passage at the top of a 50m dome which Matt had bolted up the previous year.

I was off with the Italians to push "Nightmare: Hell on Earth," a passage in Aire Fresco to which I had sworn never to return. It still seemed the likeliest place for a connection to 7km-long Sistema Soconusco, however, and over time I had forgotten the muddy rift, the slippery Guano Climb, and the gripping 40m free-climb. I showed the Italians the last survey station, and then soloed back out of the cave. No sense having four on a survey team, and I had pushed this passage to death several years ago.

Matt and Nancy returned to the caving hut just after I did. Their passage had ended in another climb with good air after a mere 40m or so. There were some plants growing at the bottom and they felt a surface connection was imminent. Matt was not keen to go back and do another bolt climb, so scratch one lead off the list. Then the second team returned from Soconusco. Their promising lead had ended after only 20m. Things were fizzling fast.

Eight hours later the Italians returned. They had connected Aire Fresco to Soconusco after only five survey stations. I felt a mixture of joy and horror. After many years of work, we had a 21-kilometer system. On the other hand, we had accomplished all our major expedition goals on the first day of the expedition. What would we do for the rest of our time?

There was a general consensus that we would go and look for new caves as originally planned. We decided that as long as we were careful, we could probably do some explorations in the neighbouring towns without having too many problems. Joe, Nancy, and I all spoke good enough Spanish to communicate our intentions, and we had plenty of experience dealing with the convoluted Mexican bureaucracy.

Our first trip saw us heading up the mountains near Jitotol de Zaragoza, about 15km down the road from the Comstock's house at Yerbabuena. On the first day we found some nice looking sinks, and the locals seemed pretty friendly on the whole. Many agreed that the place to go was a town called Calido where there were some really big caves.

As we drove further into the back country towards Calido, the reception in each town was wilder and wilder. Dozens of children would come running from all sides to see the strange gringos, and mobs of people would follow us as we went to looking for whomever was in charge of town.

Calido was a pretty weird place, somewhat reminiscent of the movie *Deliverance*. Becky said it best: "These folks ain't quite right." After some searching I found the commissioner and he took me into a room with some of the town elders, where I spent about thirty minutes explaining what we

wanted to do.

At the end of this he agreed to allow us to visit the local caves the next morning, and promised that he would arrange guides. Elated, we returned to the Comstock's house.

The next morning we arrived in Calido to quite a scene. The commissioner had decided that he could score some quick political points by getting us to buy a new bell for the church. I explained that we were not in the habit of making donations, especially religious ones, and offered to leave if we were going to cause him political problems.

Finally, we negotiated a deal that if the caves were really good and we were going to spend some time there exploring them, we would make a donation to the school when we returned for a full expedition. Grudgingly, he agreed to allow us to continue.

A typical component of every Chiapas trip I have been on is the "Death March" to a huge cave which is just a few minutes away. Rural Mexicans seem have two units to measure time: "fifteen minutes" and "very close by" both indicate a hike of one to four hours. "Four hours" and "far away" both indicate a multi-day expedition best done by helicopter or horseback.

The first cave was "fifteen minutes away" and after marching a fair distance in the blazing heat we arrived at a very nice looking entrance. Unfortunately, there was no air and the cave sumped after a few hundred meters. That was to be the story of the day.

We descended three pits, all of which were blind, and entered three large walk-in entrances, none of which drafted and only one of which continued. All in all, not enough to bother returning to, especially given the money hassles we would undoubtedly face.

We finished the day by driving further down the road to see where it led. It ended at a small town in the valley bottom in that standard Mexican fixture, the basketball court. Joe and I had a short conversation with the only Spanish speakers in town, two teachers who commuted eight hours from Tuxtla every week. A pretty big crowd formed, more curious than hostile, but since we didn't speak any Kek'Chi and they appeared to be even more inbred than the last bunch, we decided to leave.

The next day Maria and Matteo (both from Italy), Ruben, and I drove to check out a great lead Ruben had heard about. A spectacular drive through some of the most hairy roads I have ever seen got us to our destination in about four hours. Everyone agreed there was only one cave in the area worth visiting, and after some work we located a man who actually knew how to get there and was willing to guide us. He told us it was about one hour hiking, so I was completely confused, not knowing whether he meant fifteen minutes or four hours.

A second death march ensued, and by 4:00 in the afternoon, after a little more than one hour, surprisingly enough, we were standing in the large borehole entrance to Cueva de Dolores. We had about ten people with us by this stage, as all of the kids from the ranch nearby had decided to tag along to find out what we were doing. The place reeked of bats, but the urge to explore outweighed the fear of histoplasmosis, and in we went. Several kids followed us with flashlights.

We followed a fair length of flat walking passage which wound back and forth. It was very nicely decorated, flat floored, and big. There was even a human skeleton laying in the passage at one point. The local kids tossed the skull around a bit. Finally, we hit a rift with a streamway, and Matteo downclimbed into it only to encounter sumps in both directions.

We surveyed out, getting about 800 meters of survey in addition to the 300 or so meters of unsurveyed streamway. All in all, a pleasant days work and a very nice cave. On the way back, the fog was so thick that at one stage I had to walk in front of the car so we didn't drive off the 600-meter cliff along the edge of the one lane dirt road.

Flushed with our initial exploration success, we decided to go for the gold and visit Karst Mountain (our name for it). Just off the highway before Bochil is an 800-meter high limestone wall, leading to an uncut virgin jungle plateau of pinnacle karst. The topo maps show sinks up to 100 meters deep, as well as a large resurgence near the base. This is the area we had all been dreaming about since first seeing the maps several years ago.

While I was surveying Cueva de Dolores, the others had done a preliminary trip into the area to see how it looked and to get some idea of what the locals were like. When we returned, they were all raving about incredible karst. Best of all, they had lined up a local guide in La Guayaba to show them some caves.

Our original plans called for us to split into two groups, but the road to La Guayaba was blocked by a truck with a broken axle. We were told by the people working on the truck that we weren't to enter the area without permission, and that we should return at 6:00 PM to talk to the local commissioner.

We went to the next valley, and I went with one group to see some caves with a local gentleman while Matt and Nancy went down to check out some obvious sinks.

The first cave our guide showed us was a huge 60-meter wide borehole, which ended tragically in breakdown after only a short distance. Still, this was all the motivation we needed to start dreaming of the huge master cave we would no doubt soon find. We spent the rest of the day hiking from entrance to entrance with an ever-increasing group of kids. We found a nice insurgence and resurgence with a reasonable draft, which, no doubt, formed a short through-trip. We also found numerous pits, though none looked too promising.

We decided to come back the next day and try the through-trip. We hopped in the truck and drove to La Guayaba to try and get permission from the commissioner. The town and surrounding karst were every bit as spectacular as I had been told, but the reception was decidedly cool. However, after

spending some time talking to the people in the little general store, they decided that we were okay and became quite friendly. "No, the commissioner wasn't around yet, but if we waited he would show up." The people in the store were pretty curious about our equipment and what we were doing, and I went to some length to assure them that we had no weapons and were merely there to ask permission.

Quite a horde of local men was gathering at the truck and I went out to talk to them a couple of times. They were pretty unfriendly, so I finally gave up and we continued waiting in the store. Finally, as night was starting to fall, we decided to be proactive and went in search of the commissioner. Nobody seemed to know where he/she could be found, and each time I had to go through my explanation of what we wanted.

About the fifth time through my explanation of the appeals for caving, an extremely unfriendly guy (who I suspect was the commissioner), told us in no uncertain terms, that we were not welcome. There was no solution but to leave, so we apologized for disturbing them and headed back to the truck. By now I was getting some pretty bad vibes, and we turned the truck around and headed back down the road as quickly as we could.

And that was how, ten minutes later, we ended up meeting the Zapatista army. There were about ten of them, in black ski masks, armed with old bolt-action rifles. They had closed a gate across the road and the leader had a radio.

We had discussed the potential for this type of thing happening. Our general feeling was that we were quite safe from the Zapatista army because they would not want to lose international sympathy by killing us all. However, with forty-five of their people recently massacred, we were picking a bad time to test this theory. The gunmen motioned us out of the car. We stepped out of the car with our biggest stupid gringo grins, knowing that if our theories were wrong there was a good chance we would all get a bullet in the head in the next couple of minutes.

"Tranquilo, nada va a pasar," said the masked man closest to me. "Calm. Nothing's going to happen." On the other side of the truck Joe was shaking hands with the leader. I noticed that one of the soldiers was a woman. I breathed a sigh of relief. This was really the Zapatista army and not some crazy militia group. Everything I had read indicated that we would not have any problems with the Zapatistas.

They politely searched our truck and inquired what we were doing in the area. When they were satisfied that we were what we claimed to be, they explained repeatedly that the paved roads and major towns are part of Mexico, but that the highlands are their land and nobody is allowed to travel in it. They asked for 1000 pesos to let us go, but we bargained them down to 700 ($125) and were allowed to leave. We were carrying far more money, not to mention a lot of equipment they found while searching the vehicle, so I think we got off pretty easily.

Our scouting stopped after that, and everyone started to pack up to leave. I still wanted to squeeze in one more day of caving, though, so I went with the Italians to push the lead where Matt and Nancy had turned around in Aire Fresco. Matteo's gasoline-powered hammer drill made a quick twenty minutes work out of the 25m bolt climb, and left me with a major case of drill-envy.

To our delight, the passage opened immediately into a comfortably walking size, which just kept going and going. From the increasing amount of surface debris we knew we were heading to an upper entrance, but the cave showed no sign of ending and we scooped walking passage for almost an hour.

Then we noticed leaves. Next we noticed branches. After that we noticed roots coming through the cracks in the ceiling. Finally we noticed daylight coming through the breakdown. Yelling and hollering at the top of our lungs we dug out just in time to catch the last bit of daylight. Fortunately, there were no locals around to witness our triumphant exit, as the sight of us digging out of the ground yelling and screaming in joy would no doubt have spawned generations of legends of horrible cave-dwelling creatures.

We figured we had scooped over a kilometer of passage. Unfortunately, this was the last day of the expedition as the Italians had to get back to Tuxtla the next morning to catch a plane. There was no choice but to survey the cave that day if we were going to do it at all. Since all the survey gear was back in camp, we hiked the forty minutes back to town and hired a local lady to cook us some supper.

Then, at about 10:00 PM, we all returned to the cave and in a marathon six-hour session, we surveyed almost 1km of passage, de-rigged the cave, and returned to town just a couple of hours before the 6:00 AM truck left for Soconusco.

Locals walking through the cold drizzle that morning would have seen a strange sight in the back of the truck in early morning Colectivo. Lying between the stacked coffee bags were four gringos, covered head to toe in mud and wearing strange clothes. Another year of caving in Chiapas had come to an end.

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Upper left: Dan Pach and Taco van Ieperen, well dressed Chiapas Cavers. *Monique Castongay.*

Upper right: Taco van Ieperen in Aire Fresco. *Dan Pach.*

Below: The death-march trail below Lazaro Cardenas. *Taco van Ieperen.*

Chiapas 1998

En el primer día se conectaron Aire Fresco y Soconusco formando un sistema de 21 kilómetros de longitud. Al ser alcanzado el objetivo principal de la expedición el grupo de espeleólogos participantes revisó otras posibilidades en las montañas. Se encontraron algunos sótanos y bóvedas grandes pero cortos. Sin embargo, no siempre eran bien recibidos en el área por los pobladores. Se les pidió que salieran de La Guayaba y al bajar la montaña fueron detenidos por un grupo de zapatistas armados que revisaron las camionetas y preguntaron el motivo de su visita. Al final los dejaron ir sin ningún daño después de pagar 750 pesos. Éste fue el final de la búsqueda de nuevas áreas. El último día se encontró y topografió alrededor de un kilómetro de pasaje que conduce a una nueva entrada a Aire Fresco.

ROB PARKER REFLECTIONS

Bill Stone

I learned of Rob Parker's death from Wes Skiles who phoned after receiving a call from the Bahamas. Parker and five others, including his diving partner Duffer Mallone and Rob Palmer's widow Stephie, were there to shoot a documentary film about Blue Holes in honor of Rob Palmer, who himself had mysteriously perished during a dive into the Red Sea some four months earlier. Parker and the others had been working hard for two weeks, diving daily on compressed air to 60m depths.

On August 17, 1997, Mallone and Parker decided to make an exploration dive in Four Sharks Blue Hole, a well known ocean hole which continued, unexplored, at substantial depths. Because of a narrow restriction at -50m they dived open circuit side mount rigs with one tank each of trimix and air.

They staged bottles of oxygen at -10m and nitrox at the constriction for decompression, and then continued on through the fissure and into a large rift. There they descended to a depth over 100m and into virgin territory where they explored some 120m before calling the dive.

During the ascent, the trimix gas supplies ran low and a switch was made to compressed air at a depth of 67m. Shortly after this switch Mallone observed Parker to be falling, uncontrolled, back down the shaft, unconscious.

Mallone made a desperate descent to 80m, breathing air, to retrieve him and succeeded in getting the both of them back to the head of the restriction. He believed Parker to be awake, though drowsy, at that time.

The restriction, unfortunately, precluded side-by-side passage. Mallone motioned to Parker that he was going through first and that Parker should follow. On the entrance side of the restriction, Parker failed to materialize. Mallone's gas supplies were depleted (due to the emergency descent) and he was forced to ascend to decompress.

The best analysis of the accident indicates that Parker blacked out from severe narcosis after switching from a helium-based breathing mix to compressed air at 67m. Despite Mallone's recollections, it appears that Parker never fully regained consciousness after that moment. He was later found wedged in the fissure.

I first met Rob Parker in Jacksonville, Florida in the autumn of 1983. He had come to join the team returning to the Cueva de la Peña Colorada on the southern flanks of the Huautla plateau. That project required a rare mix of skills including cave exploring, rock climbing, SCUBA diving, and long range camping beyond sumps. The latter had never before been attempted. Young Parker, then just twenty-one, had shown up with minimum traveling kit and a personal recommendation from Martyn Farr.

Being some ten years the elder I initially looked on Rob as an enthusiastic rookie—to be good-spiritedly exploited for hauling tons of tackle underground. It did not take long before everyone realized that a prodigy was among us.

On our way to Huautla at the beginning of the four-month project the 8-ton truck carrying our equipment broke down. Parts were sent for, but in Mexico, nothing happens swiftly. Parker came up with a morale building diversion and rigged a 100-meter rope tyrolean across a nearby canyon. People were still riding this as the truck prepared to roll on.

It was a three kilometer gear-laden trek in February 1984 from our basecamp up a dry river bed filled with table size boulders to the entrance of the cave we intended to connect to the Huautla system, and through which we hoped to establish the world depth record.

It took the average team member ninety minutes up and sixty minutes back. Parker, being the nimble athlete, soon observed that it was possible to run from boulder tip to boulder tip with far less energy expenditure, albeit with more adventure. I noticed this too and, without saying a word, a silent competition began wherein we might independently make that run and then walk into basecamp and mutter a number to the other, the number being the latest time in minutes. By the end of the project Parker proudly announced the number "Fifteen," which was little short of Olympic speed over boulders. This would not be our last competition.

He and I became fast partners on that trip, each matched to the other's skills and stamina. We explored, side by side, territory never before seen by humans. Often climbing was involved, and he was very, very good at that. I would always be the belayer, he the leader. One day he led an exceedingly difficult route up a blank 70m-high section of canyon wall, whereupon we entered a new cavern we named Vine Cave.

When I arrived Rob was looking stunned and thoughtful. "What's wrong?" I asked. He pointed silently to the floor and there, imprinted into the hardened dirt, were bare footprints . . . no doubt hundreds if not thousands of years old. When I asked him how someone without the benefit of modern technology had managed to "scoop" his route, he nodded a few times in respect and said, "Religion, man . . . religion."

On that same expedition Rob

pioneered the climbs leading to Narrows Cave, Cueva del Altar, and Gourd Cave as well as the first exploration of Sumps 3 and 6 in the Peña Colorada.

Rob was not without his limitations. We soon discovered his one, his only, phobia: peas. Yes, I'm talking about the little round green vegetable. There ensued great debate among several team members as to just how sincere, clinical, and sensitive this malady was. Seeing as how many of us were scientists, we set out on a devious, multi-year series of experiments during which we tested the hypothesis under controlled conditions.

We injected sautéed peas, powdered freeze dried peas, canned peas and just about every other possible permutation that could still be called peas—into various foodstuffs—all to be detected by Parker's unerring sense that something was not right with the world. The ultimate "Parker and the Pea" story was his discovery, without so much as a quaff, of a single pea at the bottom of a pint of Guinness. Had we been able to isolate this detection mechanism we could have all retired rich.

Rob was always adept at unorthodox means of getting by between expeditions. He often built furniture for his foreign hosts in order to earn money to purchase a return plane ticket to England. And he knew how to turn county bridges into spider webs (for the sake of a few pounds from the local television station that was running a science story about spiders), and churches into climbing centers (which he later turned into a handsomely profitable business). But always, his life centered on being out there on the frontier, on expeditions with the few people in the world who really understood what made him tick.

Over the course of time our personal "competitions" became the substance of folklore in the exploration community. No project went by without some sort of challenge—whether several hundred push-ups over pools of sweat in the 40°C swelter of Río Santo Domingo basecamp, push-ups with SCUBA tanks on our backs in Florida, or pull-ups from the diving tower at Wakulla Springs in full dress, with the loser (that is to say, me) falling unceremoniously eight meters into the drink after matching Parker's count, but not his ability to get back on top of the platform!

Usually Rob won, but I managed to catch him off guard on just enough occasions to keep him on his toes. And so, when the British press asked him, on the eve of his record breaking descent into Wookey Hole in 1985, "How long have you been entering into these competitions?" we both wondered how the paparazzi had come to learn of our push-up contests.

After his pioneering work at Wookey, Rob's name and deeds spread far and wide. He was a leading explorer of the Blue Holes of the Bahamas along with Rob Palmer (also now deceased), and pioneered the exploration of such places as Conch Sound, Stargate, Mars Bay Blue Hole, and scores of others. He was a key member of the 1987 project at Wakulla Springs, led the first cave diving expedition to China, and was flown in by military transports in various countries to assist with rescues and recoveries.

His taped accounts of the first missions up B-Tunnel in Wakulla in 1987 still make for riveting listening. In his joking, self-deprecating manner, he would describe underwater vehicle collisions, unintended barrel rolls, camera snags, catastrophic loss of buoyancy control and other adventurous happenings at more than 100 meters underwater—while still completing the exploration and filming mission—with such runaway enthusiasm that you believed in your heart of hearts that this man was not only indestructible, he was also totally unflappable.

Others took stock of Rob's growing talent. Sheck Exley once told Leo Dickinson that had Rob lived in Florida, instead of England, that he would likely have risen to the status of the world's preeminent underwater explorer.

Seven years later, at thirty-two and a member of the 1994 San Agustín expedition, he was far more mature, yet just as capable. Having business matters to attend to with both his successful climbing center—"probably the best plywood crag in the world"—as well as becoming a talented adventure cinematographer, he arrived a few weeks late. We were short of personnel at the exploration front and were behind schedule in the transport of heavy equipment.

Within a day of his arrival, and with no acclimatization, he personally brought down a 30-kilogram hydroelectric turbine and deposited it at the Camp 3 depot along with a humorous note, and then, with offhanded ease, proceeded to rocket to the surface in three hours flat.

Lesser mortals took between ten to twelve hours. When we returned from Camp 5 later that day to discovery his delivery and note I remember writing in my log that night, "The cavalry has arrived and they are British!"

Over the following years Rob diversified his interests. He climbed Everest, became an extreme technical rock climber who toured the world in that pursuit, and shot films of sharks. His climbing business in Bristol had become so successful that he was freed of the requirements of working a regular job. To fill the gap he had become Leo Dickinson's protégé with an eye on a second career in adventure film making.

In April of 1997 we renewed our friendship at a technical diving conference in Coventry, England. Over many pints of stout and a few napkins for sketch pads we planned bold future expeditions to both Wakulla Springs in Florida and a return to the Peña Colorada in Huautla.

I was greatly looking forward to working with him once again in the field. I could sense that we both knew that such projects were what we lived for: to chart new territory in extremely remote places with a few close friends. That is, in fact, what he was doing on Andros.