

Going Deep into the Cretaceous

by *Cyndie Walck*

You didn't need the aerial photos to pick out the contact between the shale and the limestone: it was clear on the topographic map. The shale was highly dissected by many drainages, while the limestone had smooth contours and the drainages just plain disappeared. And look at those dark spots on the aerials at the contact!

Members of the Proyecto Espeleológico Purificación (PEP) have been working the central Sierra Madre Oriental karst for decades. The mountains have an 800m thick sequence of Lower Cretaceous carbonate overlain by Upper Cretaceous shales. The area was folded during the Larimide Orogeny, causing thrust faults to repeat the sequence, and forming a major anticline with abundant subsidiary folds. Most of our work had concentrated on the central portion of the mountain range where the Brincolnfernillo system has been mapped to 91 kilometers in length and 957 m deep. Now we were moving out to the west to an area we named Cretaceous Park. Here the limestone has been thrust up over the shale,

repeating the section and forming impressive towering mountains, cliffs, and canyons. Our objective was an aerial photo lead along the upper shale-limestone contact where the drainages disappeared.

CHRISTMAS 1998

A group of 15 cavers from 4 countries headed for Cretaceous Park for "Christmas with the family" in December 1998. After setting up camp on a narrow shale finger ridge at El Niño, we hiked down to the contact. The entire sequence is tilted to the west, so that the shale drains onto the limestone. It was along this contact that the aerial photo leads were located. Following the contact, we came to the first sink; it was plugged, but we found a 20m pit on the slope above: Pozo Plesosuario was later pushed to a breezy crawlway which required digging. Continuing to the north we located a small cave in a cornfield, Cueva Milpa de Maiz, which was later mapped to 126m before pinching. The third valley is where we found the dinosaur: a 25m headwall towered above

a large, deep pit with the sound of a waterfall below. We dubbed this *Sumidero Suchomimus*, after a dinosaur discovered recently in the Sahara. Realizing that the arroyo coming off the shale did not enter this pit, Peter Sprouse walked a little farther upstream to find it sinking into another entrance (the Arroyo entrance), which would eventually connect. Continuing on our walk-about, the next valley had a plugged sink, but in the 5th valley we located a small entrance just above the sink that was sucking air. Due to the festive color of Peter's attire we named this one *Calcetinas Rosas (Pink Socks)*. This one needed a bit of enlargement, but the air was encouraging. Not bad for the first day of recon!

SUCHOMIMUS

We worked *Suchomimus* from both the main pit and the arroyo entrance: generally using a rigging crew coupled with one or more survey



crews in each. The big pit was 15m in diameter and bottomed out in a pool room 80 m below. The passage continued to the north as a narrow, sinuous canyon that wiggled upward with no ceiling in sight. The canyon was scalloped in clean-washed, black limestone, shot-through with thin white calcite veins. The floor steadily descended through a series of 1 to 4m climb-downs and drops into plunge pools where the passage would widen and deepen (i.e. swims and wall-clingers). Then we arrived at the edge of the abyss—a 100 m deep pit series, which we rigged with a series of seven rebelay, aptly named the *Jungle Gym*. Our group rigs mostly with 8.5 or 9mm rope, requiring lots of rebelay and re-directions to avoid rope-rock contact. As always with multiple crews working the same cave, we would all arrive back at the pit series simultaneously, but "sharing" those warm carbide generators provided ample entertainment. The bottom of the *Jungle Gym* led to a kilometer of large canyon passage, which abruptly ended as nearly the entire passage was filled with flowstone. Except, that is, for a tiny hole with a gale wind, which would require "enlargement".

Meanwhile, the arroyo entrance led through a series of drops to junctions with



Cyndie & Scott "riding the bus," the best seat in the house on Charlie's Savvas' unique 4WD



The author descending a typical drop in Trex. Passage bells out and is often covered with flowstone at the drops.



Susie Lasko descending zebra drops in Anaconda

infeeder coming in from above as well as passages continuing downstream. Running out of "real rope" on the first day, Peter provoked Cyndie's famous whine by rigging 7mm "shoestring" on the last couple of pitches. But it paid off when the passage tied in as a window to the main shaft, 40m below the top and still 50m above the floor. Mapping down another beautiful meandering passage led to another window, where water pouring over the edge formed the waterfall midway down the main shaft. Several infeeder were climbed, leading to additional vadose canyons, some reaching to near the surface. Altogether we had mapped 2.6 km in Suchomimus, with a depth of 317m.

ANACONDA

On a rest day a few of us hiked to the west to check another aerial photo lead. An old road led right to the sink, and seeing the large headwall with walking passage leading into darkness below, we knew we had another big cave. A small stream flowed over the shale and sunk at the limestone contact just upstream. Again the cave was carved into clean-washed black limestone, riddled with white, calcite-lined fractures resembling stripes. The ceilings of the tall canyons disappeared above and the floors were coated with a thin layer of pink flowstone. The cave went down a series of climb-downs into plunge pools, back into sinuous canyons, and then would abruptly turn a corner and drop vertically over a flowstone waterfall into a room below. It corkscrewed down 5 short drops totaling 50 meters in the Zebra Series, in profile resembling a coiled snake and inspiring the name Anaconda. A horizontal canyon continued, and at one point became nearly filled with flowstone in the Rabbit Wash area, but again opened up and rounded a corner and opened into a broad room with no floor: 30m Bunny Falls. The passage continued alternating between

clean-washed, black-and-white-striped limestone canyons, and areas with flowstone boneyard, until we reached yet another large pit. The next day was Christmas Eve, and Bernhard Koeppen and I were rigging down that next pit. He headed down the pit first, doling out 65 m of rope. When I reached the bottom and saw borehole heading off, I was surprised to see Bernhard still there. He said "Cyndie, I wait for you, we go together!" (Chivalry is not dead!) The pattern continued as the borehole transformed back into tall sinuous canyon, but this time with much more calcite formation. The calcite eventually prevailed, taking up the whole passage and not even leaving us a breeze to follow. We had mapped the cave to a depth of 278m and 1.2 km in length.

PINK SOCKS

The lure of the sucking hole at Pinks Socks brought Peter, Susie Lasko, and Scott Scheibner back. Within a short time they had it dug open into walking passage heading straight to a 7m pit. Charley Savvas, Christie Rogers, and Kevin Stafford took on this cave, mapping down 5 more short drops and climb-downs to a depth of 87m, and a 50m crawl. It was almost the end of the expedition at that time and most of our 1200 meters of rope was already used up. But Kevin and Charley were obsessed; scrounging for rope and hardware, and kidnapping Christie on an all night trip, they pushed to cave to a depth of 221 meters, stopping at the top of a 60-meter pit. Within an hour of their arrival back at camp we were headed down the mountain.

T-REX

Near the end of the trip, a group hiked to the far north to check yet another air photo lead. Just when we thought we had struck out, we saw a moderate sink that went straight down the 40 degree dip into the mouth of the dinosaur. This was the biggest of them all: T-Rex! We mapped just a few shots in the entrance while Bernhard checked down the main drain. He came back breathless, having fallen down the first climb,



Entrance to Sumidero Anaconda, Bill Mixon and Walt Olenick

and exclaimed "it's a Bosch cave!", excited at the prospect of yet another vertical wonder.

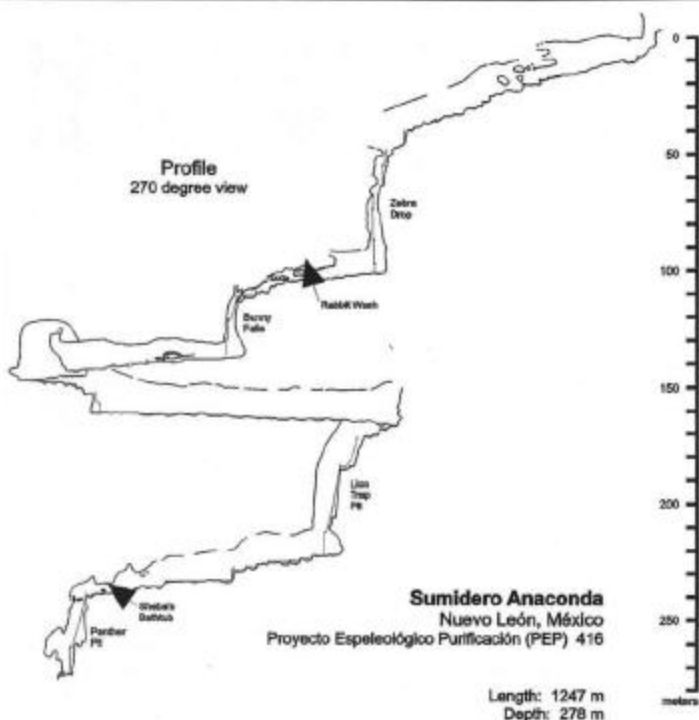
On off days we also did some exploration of Infierno Canyon. This remote canyon had never been totally traversed. It is situated in remote rugged mountains and gouges a deep gorge through the heart of the sierra. The canyon is narrow and deep, letting little sunlight penetrate. And the water was colder than in the caves! Since the caving was so good we left continuation of the canyon exploration for a later trip.

After our first trip to the area we had managed to use up all of our rope and all of our bolts and rigging gear. We had even resorted to calling Joe Ivy by cell phone (who we knew was leaving shortly for another Mexico trip) and getting him to meet us at the base of the mountains with another box of bolts. We had scribbled and scribed and managed to map 5 km of cave; two to over 200m in depth and the third to over 300m. We had major going leads and even the



View down Infierno canyon from Garza toward the coastal plain

Profile
270 degree view



Surveyed using fiberglass tape and hand-held compass and clinometer

23-30 December, 1998

by John Fogarty, Bernhard Koeppen, Suzie Lasko, Barbara Luke,
William Nixon, Rae Nadler-Olanick, Walt Oerick,
Laura Rosales Lagarde, Scott Scheibner,
Peter Sprouse, Maria Tehrany,
and Cyndie Walick

Map drafted by Barbara Luke



Peter Sprouse

Typical sinuous passage with no ceiling. Curvy passage made it difficult to get long survey shots.

surface was beautiful! No wonder we couldn't wait to come back!

CHRISTMAS 1999 COULDN'T COME SOON ENOUGH!

The following year we had no trouble getting recruits, so 19 cavers headed for the mountains to converge again on this area. The vision of the jaws of T-Rex was still fresh in our minds from last year, so we immediately loaded up with ropes, drill, and



Peter Sprouse

Laura Rosales & Bill Nasby in the skylight section of Upper Suchomimus



Scott Scheibner descends past a rebelay

rigging and headed out. From the gaping maw, a 20m wide by 8m tall entrance, the cave slanted steeply down the dip with numerous smaller side leads along the walls. A pit series led off from the main chamber with the enticing sound of running water below. We rigged and mapped down 5 drops to a depth of 127 meters. There we found a horizontal passage whose walls were covered with steep silt deposits. The silt banks contained tiny mud "ollos": silt forms shaped like spherical vases with narrow necks. We believe these to be cocoons for the blue centipede ubiquitous throughout these caves. The silt piles also contained schizomids, likely a new species. The walking passage pinched to a gravel stream crawl. The crawl quickly shrank to a point where Bev Shade, who is

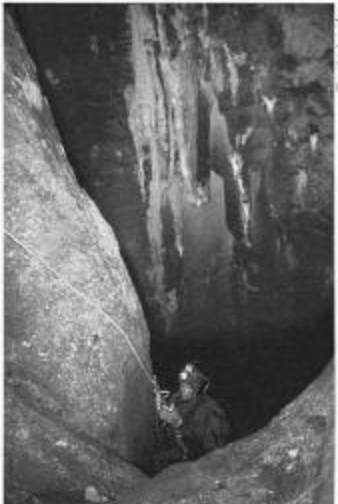
famous for squeezing herself into small places, had to be pulled out by Gustavo Vela. Having killed the bottom of the cave, Barbara Luke, Pat Malone, and Scott Scheibner tenaciously pushed the honeycomb of passages in the upper cave. This required making several more of the arduous hikes out to the area (which Barb claims she "enjoyed"), and resulted in them being delirious enough to name passages things such as the "Purple Frog in Love" room.

PLESOSAURIO

Bill Nasby was hell-bent on making Plesosaurio (the cave in the first arroyo) go, and he got Nancy Pistole and Pat intrigued too. In no time they had the dig opened up, finding .yep, you got it, a sinuous canyon passage leading to a narrow pit. This was a smaller, tighter version of the other caves. And indeed it was an infleeder, which tied into Plethodon Canyon in Upper Suchomimus. The larger dinosaur had now swallowed Pozo Plesosaurio, christening the combined caves Sistema Cretacico.

PINKS SOCKS/ SATAN'S PARALLEL BEDLAM

This is the cave that had been left last year with the comment "cave kicks ass!" at the top of a deep pitch in Charley's survey book. It took a couple of trips to get down this pit series... More Rope! More Rope! This turned out to be a series of barely offset pits, totaling 200 m in depth and requiring countless rebelays and re-directions. The pitches were beautiful, with scalloped black-and-white striped and folded limestone, iced with pink flowstone. It earned the name "the vomit series" only due to the level of exhaustion. After a total of 14 drops the cave leveled out at a depth of 321 meters in a round pool room lined with flowstone, with a convenient horizontal trunk heading off one side. The passage quickly assumed the familiar canyon characteristic with a small flowing stream. For this passage we did a large group trip, sporting two leap-frogging survey teams leap and two photo teams. Alas, after 400 meters

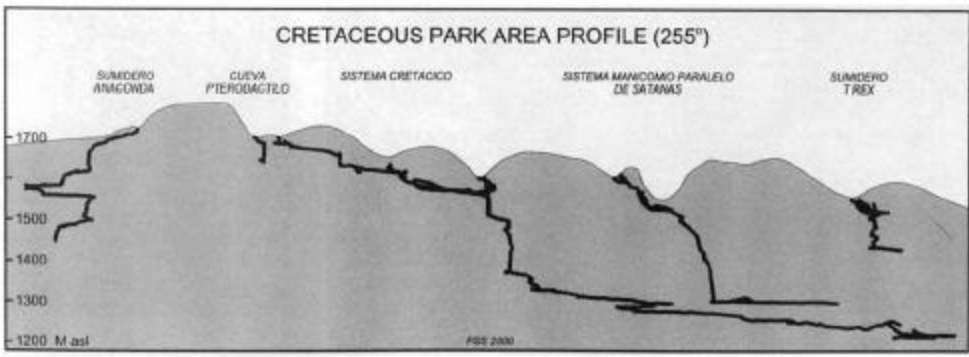


Laura Rosales at first rebelay, top of 80m pitch in main Suchomimus entrance pit

the passage ended in a sump. Matt Oliphant submerged himself for some blind groping, but found it to be boulder choked. The nice thing about deep pitches broken up by rebelays is that it makes for a fairly smooth exit in spite of having a relatively large group. You can just get into a rhythm, traveling mostly solo with just the occasional "rope free" or "libre" connecting you to your fellow cavers: of this 25 hour trip, almost 20 was on rope! And then there was the de-rig trip—now that was a pile of rope to carry! Pink Socks a.k.a. "Satan's Parallel Bedlam" totaled to 321m deep and 1.57 km long.

SUCHOMIMUS/SISTEMA CRETACIO

Sucho had been left the previous year at a flowstone constriction with a howling breeze coming through it. It required a few work trips to the bottom to enlarge this passage to be humanly (not humanely)



Cynthia Waack

Photo: T. Waack



Cyndie Walck getting on rope at the top of a dop in Suchomimus

possible. As a matter of fact, after Kevin's first trip through, the gouges on his body dissuaded him from a return. Beyond the thrasher squeezes, we found 500m of windy walking canyon passage, which again choked down with flowstone. and a breeze. Beyond the second constriction, the passage opened up into nicely decorated walking passage, traversed by 3 to 6 cm thick black chert veins with a small flowing stream. The chert, being less soluble, had a positive relief, sometimes protruding more than a meter from the walls. Since the limestone beds were tilted and folded, the chert formed

consecutive rings which stuck out into the passage, making it appear you were walking through a whale belly; in other places it was folded into spectacular chevron angles. They were also wickedly slick—not only difficult to climb over, but hard to stand on at all. I fell flat on my face when standing, still sketching! The passage continued for quite a ways and then suddenly opened up into a huge chamber. The large square borehole room had mountains of mud-sand dunes. This room obviously backs up with lots of water, and indeed a small drain takes off at the bottom. We shot off a flare to get a good look at our Mud Room, and shot photos before the long commute back to the surface. Luckily Bev had convinced most of us to paint our fingers with glow in the dark polish to entertain us while we waited our turn starting up the ropes. And then—why do I always volunteer to go back on the de-rig crew? Is that true masochism?

We also continued working in Upper Suchomimus, climbing several canyon leads, one of which became the tie in with Plesosaurio. These infeeders were just miniature versions of the main cave: typified by narrow, twisty, striped canyons punctuated with plunge pools and vertical pitches, some short, some deep.

In March, 2000, a third trip was made to Sucho, headed up by Bill Nasby. They returned to the lead off of the Mud Room, and mapped approximately 300 meters down the drain passage to a constriction. After enlargement, they got through to a stand-up sized chamber with a mud- and gravel-choked drain. This marked Suchomimus/ System Cretacico's final length and depth of 5.9 kilometers and 465 meters.

OTHER CAVES ON EL NIÑO

The prominent cliffs in our daily view on the flanks of Cerro El Niño. One of the local residents told us he knew of caves on the mountain, so we headed up to have a look. It was challenging just to arrive at the base



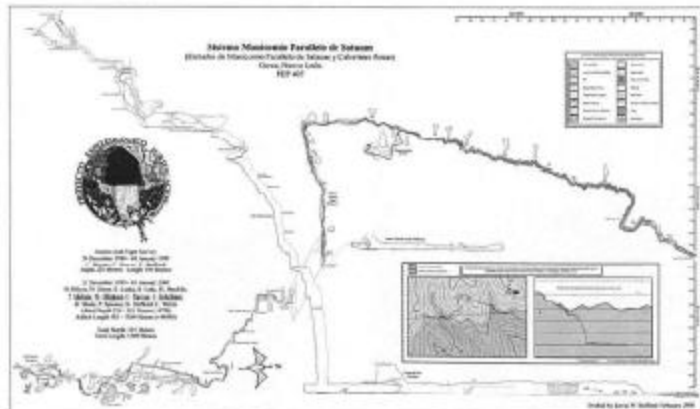
Susie Lasko & Marie Tehrany in a typical canyon in Anaconda; note the white calcite veins shot through the black limestone and the myriad of scallops

of the cliff band; ropes might have been more dependable than the vegetation "holds." The caves were at the base of a 100m tall limestone band, and turned out to be deep narrow stress relief fissures. They often were dangerous with loose rock, but were interesting geologic features. They were nearly vertical with small offsets, and continued horizontally indefinitely, punctuated by accumulations of rock debris. It being the first day of the new millennium, Dan Green and Danielle Bilyeu named one cave Y2Cueva.

On an "off" day, Dan found a beautiful pit on the hillside above the second valley. He recruited Liam Town and myself; loaded with kilometers of rope we found "Pozo Verde" bottomed out at 13 meters.



Antonio Soriano in Plethodon Canyon, Upper Suchomimus



Superstition this holds...if you bring lots of gear then it won't go!

Another "off" day was spent practicing pick-offs in the tree at camp. This provided endless hours of entertainment as various combinations of cavers mangled each other. The highlight was Heidi Macklin bouncing and straddling over Charley, whose legs had gone numb and eyes had rolled back into his head.

This new area provided me with some of the greatest caves of my "career." Thank you soluble mountains, and thank you Oztotl!

PARTICIPANTS:

USA: Danielle Bilyeu, John Fogarty, Jubal Grubb, Susie Lasko, Barbara Luke, Pat Malone, Bill Mixon, Walt & Ray Olenick, Matt Oliphant, Nancy Pistole, Christie Rogers, Charley Savvas, Scott Scheibner, Bev Shade, Peter Sprouse, Kevin Stafford, Maria Tehrani, Cyndie Walck, Cathy Winfrey

Canada: Randy Brown, Dale Chase, Peter Curtis, Dan Green, Bill Nasby, Roberta Snider

Germany: Bernhard Koppen
Mexico: Laura Rosales, Antonio Soriano, Javier Vargas, Gustavo Vela

Australia: Heidi Macklin, Liam Town
The Proyecto Espeleológico Purificación conducts regular expeditions to explore the caves of the Purificación karst in the states of Nuevo León and Tamaulipas, México. An annual journal, the *Death Coral Caver*, is published. For more information visit the project's website at www.purificacion.org

The PEP would like to thank the following for support for the Cretaceous Park expeditions:

Gonzo Guano Gear
National Speleological Society
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CRETACEOUS PARK STATISTICS

Cave	Length	Depth
Sistema Cretacio (Suchomimus)	5905m	405m
Sistema Manicomio Paralelo de Satanas (Pink Socks)	1562m	321m
Sumidero Anaconda	1246m	278m
Sumidero de Tiranisaurio Rex	1112m	127m



Peter Crouse



Bat biologist Antonio Soriano studies a bat

Susie Lasko pondering a slide down through a zebra belly