Exploration and Survey of the São Vicente System, Goiás, Brazil

by Steve Taylor, Leandro Dybal Bertoni, and Jean Krejca

In a remote part of central Brazil, about 350km northeast of Brasilia, a long narrow band of limestone bisects the otherwise less permeable rock of this region. During the rainy season a dense forest of vegetation bursts forth, rivers swell, roads become impassable, and caves grow. In stark contrast, the same area never receives rain during the dry season. The rivers ease back into their banks, and vegetation becomes dry and thorny, storing water via a variety of tricks of evolution. A common sight atop the limestone band is the "belly tree," with its massively swollen trunk and small crown of bare branches.

In the dry season, the caves are no longer sumped, and exploration is feasible. Several groups of Brazilian cavers (Opilioes Caving Club, Clube Alpino Paulista [CAP], União Paulista de Espeleologia [UPE], Centro Excusrionista Universitario, Bambui, and the caving club from the Geology School from Brasilia University), many of whom are now affiliated with the Brazilian national society (Sociedade Brasileira de Espeleologia [SBE]), have been exploring and mapping caves in this limestone band over the last 23 years. Recently, new logging roads have lead to a new era of exploration and mapping.

There are several cave systems crossing the band of limestone, their rivers generally flowing from east to west. From north to south, these systems are:

Angelica-Bezerra System—10km
São Vicente System—14km + 6km in 1995 = 20km
São Mateus-Imbira System—13km
Terra Ronca—4km
São Bernardo-Palmeiras—2km

These are the lengths as found in the Brazilian national cave survey database, last updated in 1989. There has been signicant new survey done in several of these systems since that time, particularly by the Bambuí caving club and União Paulista de Espeleologia. The 1995 expedition resurveyed 4.24km, and added 6.04 km of new survey to the São Vicente System.

In the summer of 1995, the 11th Expedition to the caves of the São Vicente System was undertaken by 18 cavers from the club in São Paulo, Brazil, UPE [Ana Cristina Hochreiter (Nina), Danilo Allegrini, Ericson Cernawsky Igual, Fábio Kok Geribello (Coringa), Fábio Valentim von Tein, Gabriela de Britto Slavec, Leandro Dybal Bertoni, Luiz Bernardino, Márcia Barros Scaranello, Olavo Ruy Ferreria, Peter Slavec, Ricardo Barone, Ricardo Martinelli, Ricardo Terzian (Jerry), Roberto Brandi (Expedition Leader), Rodrigo Astiz, Urandi Correa, William de Paula Amado], along with five cavers from Ljubljana, Slovenia (Franci Gabrovsek, Marko Simic, Natasa Kavcic, Dorotea Versa and Branka Hlad) and four from the United States (Steve Taylor, Jean Krejca, Jeff Swayne and Hope Kartheiser).

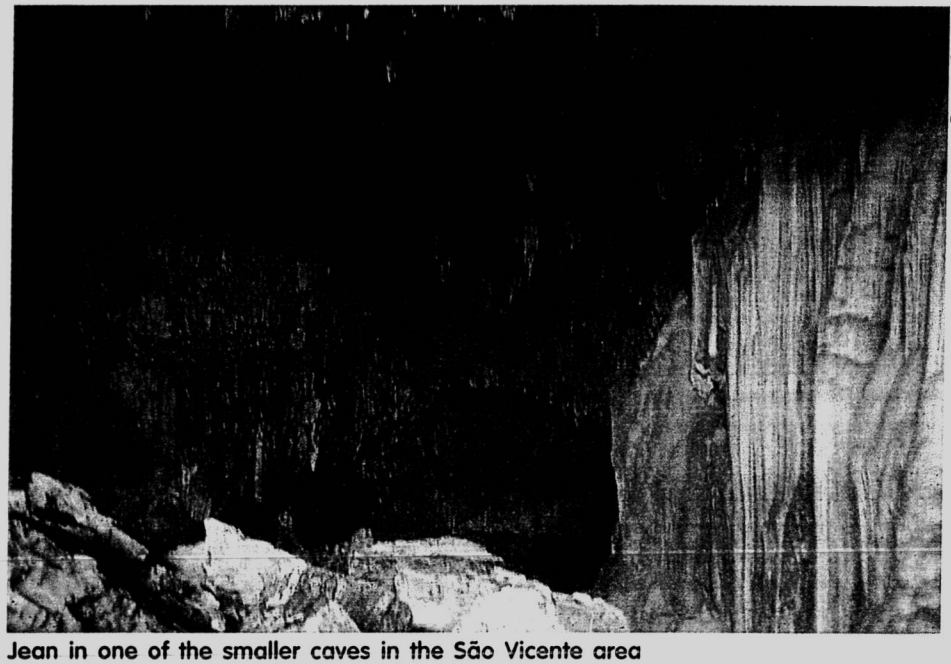
Getting to the Cave

A group of cavers from North America and Slovenia were welcomed into São Paulo, Brazil, by Leandro (co-author and our host and cartography coordinator), Roberto Brandi (expedition leader) and Peter Slavec, with an evening of eggplant pizza and dark beer. During two days of preparations in the city, the biggest shock was the price of duct tape. We knew that the exchange rate was unfavorable for US dollars, but the $US39 roll of duct tape (worth $3 back in the United States) still came as a shock. Other supplies were much more reasonably priced, but still higher than US prices.

July 15th, 1995, at about four in the morning, some 14 cavers arose from the floor of Peter Slavec's home in São Paulo and headed north in a caravan of vehicles. Two days of driving, interspersed with the usual assortment of automotive difficulties, brought us to the northeastern corner of the state of Goiás. Here, we finally left the pavement. The dirt roads cost one vehicle its exhaust system, which was demoted to being tied on the roof, and our vehicle killed a parakeet which was flying across the road.

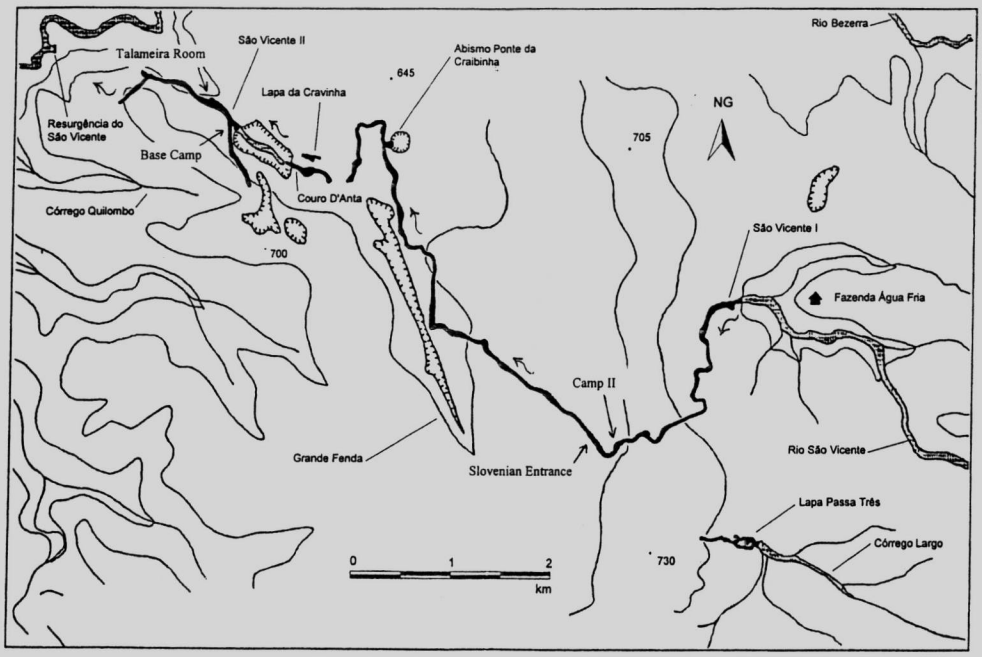
Soon we dropped off of a high plateau into a remote arid valley. A small group of endangered Blue-and-Gold Macaws were sighted. After several dusty hours, on lesser and lesser roads, we came to the last outpost of civilization, the small village of São Domingos.

The other Brazilian cavers were already in town, and the total of 27 people met at a hotel for lunch where conversations in Portuguese, English, Slovenian, Italian, and Spanish could be heard intermingling. That afternoon, the 17th of July, we all headed towards the expedition base camp. The roads only got worse after leaving São Domingos. Only a Toyota 4x4 and a very large all-wheel drive dump truck (commissioned from the municipality of São Domingos) could continue on for the last few hours of driving. The final leg of the journey in the dump truck was quite memorable. Before us was an ox cart logging path (we even saw the oxen!) that never dreamed of accommodating a vehicle of this



Steve Taylor

Jean in one of the smaller caves in the São Vicente area



Sistema São Vicente, adapted from Desnível 1(1), May 1995

size. The ride in the bed of the dump truck, filled with its burden of packs, ropes, machetes, and two weeks of food for 30 people, was rather treacherous. Gear and high-spirited cavers were tossed about the bed as the truck lurched along on its uneven path. In front of the truck, large limbs and small trees were pushed ahead like a catapult prepared to launch, snapping backwards through the open bed of the truck as we all hit the deck, showered by an array of limbs, grasshoppers and biting ants.

Finally the second and last truckload of cavers and gear had arrived, just after nightfall. In the darkness, a line of lights could be seen hiking out into the night, and disappearing into a large karst window. At the rim of the karst window, one could hear the roar of the river some 100m (330ft) below. Lit by carbide and millions of stars, we climbed down to the mouth of São Vicente II, the downstream cave in the São Vicente System. The mouth of the cave invited us down, and we passed huge stalactites and trees well beyond the drip line. Friendly firelight flickered at the cave entrance where cavers were setting up base camp, a site of many a memorable evening of jokes, songs, wine and other traditional South American drinks. This entrance was decidedly the favorite of all the cavers there. In addition to watching parakeets, monkeys, and bat falcons go by, there is a side passage that carries geothermally warmed water. The mouth of this Hot Water Passage became the soaking place of choice after a long day of caving.

Steve Taylor

Jean Krejca executes a short downclimb before completing the sketch of a 30 meter pit discovered during the expedition.

Objectives

1) Explore the surface rift to find a new entrance into the middle parts of São Vicente I 2) Establish two remote camps in São Vicente I to survey far from the known entrances 3) Check leads in São Vicente II, where base camp is 4) Quickly resurvey parts of the system to establish permanent stations where old data has been lost 5) Look for other caves in the area

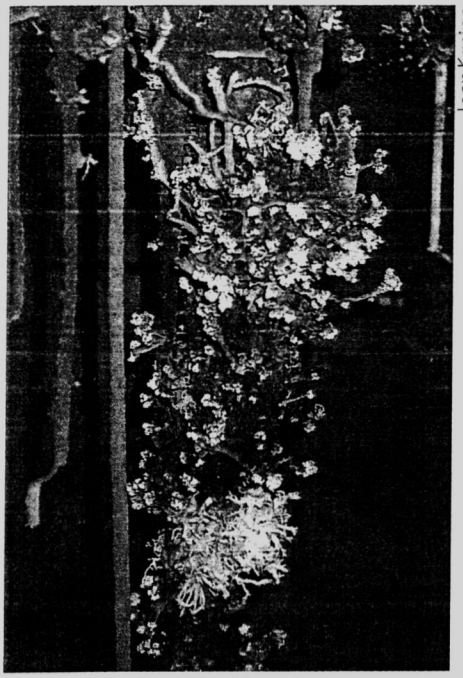
Exploration of the Rift

The morning after our arrival at base camp, a short meeting organized the cavers into various groups. This day most would hike on the surface to the big rift, in search of a new entrance into the system. A long hike brought the cavers to the rift, which was only partially explored due to the limitations set by the duration of the hike and the need to return to camp (the only source of water) by nightfall. While a new entrance to the system was not found, several new caves were discovered.

São Vicente I:-the Camp 2 Discoveries

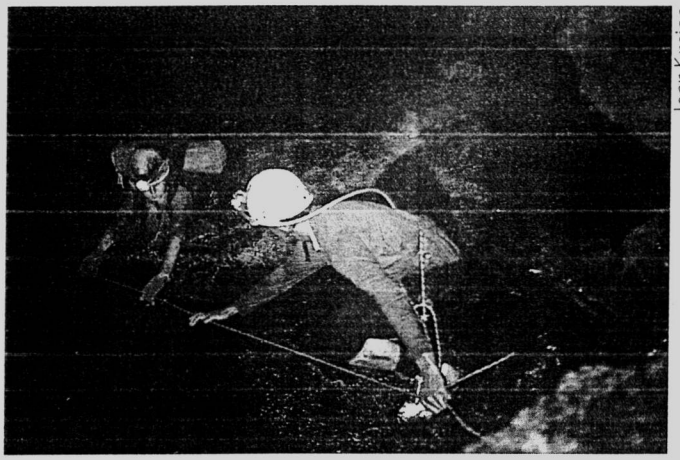
The Camp 2 (most remote) team, comprised of the most hardcore cavers (one American, the five Slovenians, and four Brazilians), had hoisted packs filled with five days of supplies and headed into São Vicente I via the Ponte da Craibinha entrance. They pushed upstream at a brisk pace for about eight hours, traversing the river repeatedly, avoiding the river when possible, to establish Camp 2 deep within the cave. Caution was on the minds of most of the team, as a caver had died during the 1994 expedition (in Angelica Cave), falling from a high ledge down to the river while surveying. Here in the most remote part of the São Vicente System, mapping and discovering new galleries high above the river occupied the days. The air in the cave was warm and humid, and nostrils were filled with the odors of sandy clay and innumerable burnt insects attracted to the flames of carbide lamps.

The first day of mapping, the Camp 2 cavers split into two teams, one comprised of the Slovenians and the other of Brazilians and an American (Jean). After a hard day of surveying, all returned to camp to share dinner together. Afterward, while washing up, one of the Slovenians, Marko, nonchalantly handed Jean a bright green sprig of leaves. "What's this!!?" The Slovenians had discovered the much-sought-after middle entrance to the cave! The next day, part of the Camp 2 team went out the new entrance and bushwhacked back to the base camp at the entrance of São Vicente II so that the new entrance could be found on the surface. Others in the Camp 2 team spent the day in two survey teams mapping upstream from Camp 2. Upon returning from a full day of surveying, it was a welcome sight to see the first team had reached the karst window entrance and returned safely....and with BEER! That one can of warm Antarctica Beer (a common Brazilian brand), which had just been dragged through kilometers of rugged jungle and cave, tasted all the better after three days underground. The Camp 2 team spent the last part of their five days underground upstream from their camp, taking pictures in the cave and mapping up a side passage where survey was stopped by bad air. Return to Base Camp in São Vicente II was via the new "Entrance of the Slovenians"—a notably shorter trip than the arduous trip into the cave. For some, it was the first time



Jean Krejca

Formations in São Vicente I



Jean Krejca

Luiz Bernardino helps Dorotea Versa on an in-cave river crossing going to Camp 2 in São Vicente I

to see the sun in five days.

São Vicente II-Discovery of the Talameira Room

The team looking for leads downstream from base camp in São Vicente II discovered a tight high lead that eventually broke out into an upper level (Talameira Room) of enormous size. The passage was so large that survey had to be along each wall, with occasional tie-ins to the opposite wall. After two full days of surveying, it was thought that the big passage had come to an end. But one of the younger Brazilians pushed around in the mud and breakdown and found a crawlway that branched off the big trunk passage. Survey in this crawl just kept going and going—the end was never seen. Running out of time, as the expedition came to a close, the lead awaits a further expedition. It is thought that this passage may serve as an overflow route during heavy flooding. The passage has the potential to connect to the next major cave system to the northwest (Angelica-Bezerra System).

Here a Cave, There a Cave

While the Talameira Room was being surveyed by Leandro and other Brazilians, two of the Americans (Steve and Jean) went out in search of smaller caves on the surface. An hour hike from Base brought us to a rugged area of pinnacle plateau karst interspersed with dense jungle-like vegetation which was dry and thorny, awaiting the return of the rainy season. Here, four small pits were soon found. Two were free-climbed and mapped, but the others required rope. The following day, we returned with more equipment, and while part of the group was busy mapping this pit, the others discovered still more caves.

The landscape was rugged and treacherous, and each little shadow was a candidate for a pit, so progress was slow. Flocks of parakeets, other birds, and insects were abundant. We had been warned of the potential of encountering rattlesnakes as well. In the caves, we saw amblypigids, crickets, snails, and bats.

A third day in the area was used to finish mapping these small caves and obtain GPS locations. During two surface surveys that day, still more pits were found. We finally started just ignoring pits, because there was not time to map them. In all, some 14 small caves were found within an area the size of a football field (see Taylor 1995). We left the area feeling confident that there were literally thousands of small virgin caves and pits to be found. With a vertical potential of 100m (330ft), and the chance of breaking into some big cave, the area certainly bears further exploration.

Heading Homeward, Farewells

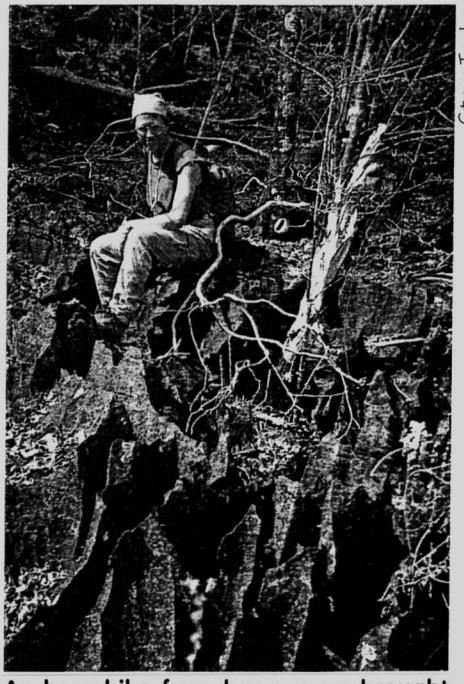
As the expedition drew to a close, several of us went to São Mateus III, the next cave system over from the São Vicente System, and Brazil's second longest cave to visit its large white formations, clear river and burbling sumps. From here groups went their own ways—back to work or to finish off their vacation at caves in the more well-known karst areas of Southern Brazil such as those in PETAR cave park.

Summary and Future Plans

The expedition was clearly very successful. A total of 11.5km (including 7.27km [4.5mi] of new survey, plus 4.24km [2.6mi] of resurvey) produced two major new discoveries (the new Entrance of the Slovenians and the Talameira Room) and 16 new caves were recorded. Details of each cave (length, name, etc.) and survey trip can be found in *Desnível,* the newsletter of UPE, or viewed on their website: http://www.upe.org.br. Quote of the expedition: Caves are different everywhere, but cavers are cavers both here and there!

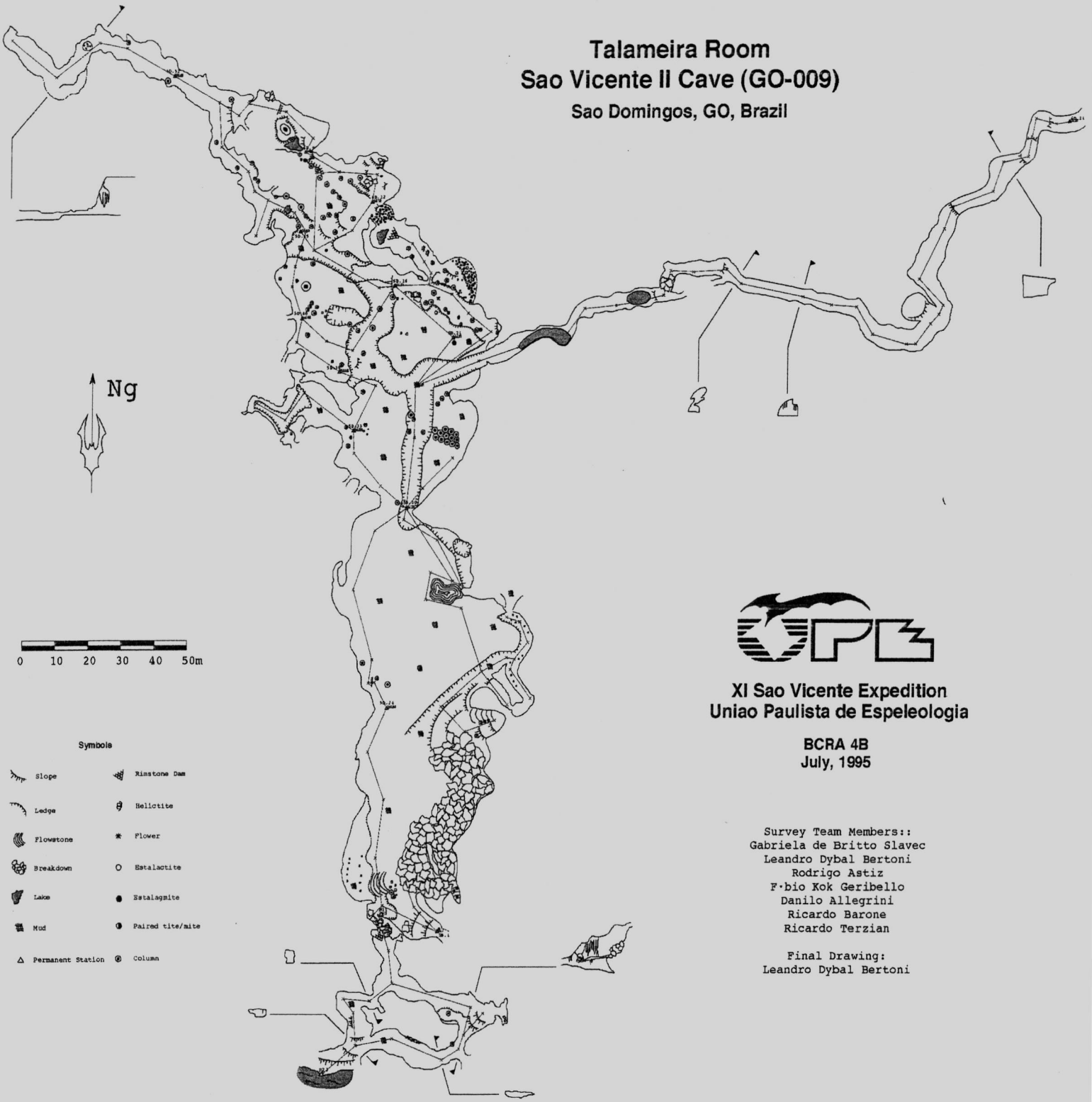
Acknowledgments

The success of and international participation in the expedition would not have been possible without the unwavering cooperation, commitment, hospitality, generosity and enthusiasm of the cavers of União Paulista de Espeleologia (UPE - São Paulo, Brazil) and the cooperation of the national caving society of Brazil (Sociedade Brasileira Espeleologia). Participants from Slovenia and Illinois helped to complete the expedition. Roberto Brandi worked very hard to make this expedition a success, we thank him for his diligence and commitment to the expedition. Two of us (Steve and Jean) would like to thank two UPE cavers in particular: Leandro Bertoni and Peter Slavec. Leandro and Peter, and their families, were the finest of hosts. They coordinated the visits of the Slovenian and the U.S. cavers, making every conceivable arrangement, and



Steve Taylor

An hour hike from base camp brought us to a rugged karst plateau where many small caves were found.


Talameira Room
Sao Vicente II Cave (GO-009)
Sao Domingos, GO, Brazil
Ng
0 10 20 30 40 50m
Symbols
Slope
Ledge
Flowstone
Breakdown
Lake
Mud
Permanent Station
Rimstone Dam
Helictite
Flower
Estalactite
Estalagmite
Paired tite/mite
Column
XI Sao Vicente Expedition
Uniao Paulista de Espeleologia
BCRA 4B
July, 1995
Survey Team Members::
Gabriela de Britto Slavec
Leandro Dybal Bertoni
Rodrigo Astiz
F·bio Kok Geribello
Danilo Allegrini
Ricardo Barone
Ricardo Terzian
Final Drawing:
Leandro Dybal Bertoni

ensuring that every day in Brazil was filled with caving, fun, and adventure.

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Jean Krejca

Roberto Brandi (front and center, expedition leader) and other members of the Camp 2 team at the newly discovered Slovenian Entrance to São Vicente I

History of the Exploration of the São Vicente and Adjacent Cave Systems in Brazil

by Leandro Dybal Bertoni and Steve Taylor

The karst of northeastern Goiás was first investigated by cavers in 1971. These cavers came from São Paulo, Brazil (though many were Europeans, especially French) in search of caves in the states of Goiás and Bahia. The São Vicente System was not discovered at this time, but the area showed considerable promise. With information gathered in 1971, a bigger expedition was organized in 1973, and systematic exploration of the major cave systems began. The Angelica-Bezerra System was surveyed by the Opilioes Caving Club, the São Vicente System by the Clube Alpino Paulista (CAP), and São Mateus-Imbira by Centro Excusrionista Universitario (CEU). This "division" of the karst area held for more than 13 years, until Opilioes and CEU "lost" their caves due to lack of interest (they didn't go there!) and other groups started exploring and resurveying their caves (Bambui working in Angelica-Bezerra and the caving club from the Geology School from Brasilia University, GREGEO, surveying in São Mateus-Imbira). The area proved fruitful, and current surveyed cave lengths from this karst area together total more than 80 kilometers.

It was in 1973 that the upstream entrance of São Vicente I was discovered and explored for about 1400m (4600ft). During this expedition, the Couro D'Anta and the entrance to São Vicente II were discovered but not explored. The following year, an expedition led by CAP cavers Peter Slavec and Max Haim went to the Couro D'Anta valley, and explored and surveyed 2500m (8200ft) in São Vicente II. Survey in São Vicente II would not commence again until the 1995 expedition. Also in 1974, Couro D'Anta Cave, a fossil upper with lots of breakdown, 600m (1970ft) was surveyed and Passa Tres Cave, a possible infeeder to the system, was surveyed to a length of 780m (2560ft). Returning in 1976, the CAP cavers, accompanied by a group of Polish cavers, surveyed another 1200m (3900ft) in São Vicente I, entering the from the upstream river entrance, ending survey at Iguacu Falls.

Peter Slavec, Max Haim, other CAP cavers, and some Argentine cavers returned to Iguacu Falls in 1978, but after conquering the waterfall, they found themselves ill prepared for the treacherous river passage beyond. Instead, they surveyed 770m (2500ft) in São Vicente II and 150m (490ft) in Couro D'Anta Cave.

Six years later, the CAP cavers invited Claude Chabert and other French cavers from the Speleo Club de Paris (SCP) on another expedition to the area. Several small caves and smaller additions to the main cave were surveyed. In 1986, CAP and SCP cavers surveyed 350m (1150ft) through breakdown in Couro D'Anta Cave and conducted surface prospecting with little success. The following year, 200m (650ft) of survey was gained in the difficult canyon passage after Iguacu Falls in São Vicente I, but survey by CAP and SCP was again held up by treacherous river passage downstream of yet another waterfall. During the same expedition, another 600m (1970ft) were surveyed in São Vicente II. It was during this expedition that the Ponte da Craibinha Pit entrance was found, opening the exploration of the downstream part of the São Vicente I beyond the difficult river passage that had slowed progress in recent years. Starting at the Craibinha Pit entrance to São Vicente II, the 1988 expedition mapped 1650m (5400ft) of big river passage. In this expedition, CAP was assisted by Michel Le Bret (a French caver, and founder of the SBE [Brazil's equivalent to the NSS]) and SCP cavers Jean Maurizot and Bruno Chaumeton. The next year, survey continued upstream from the 1988 EOS, with CAP cavers, assisted by Italians from Commissione Grotte Eugenio Boegan (CGEB), logging in 3800m (2.4mi) in the São Vicente I river passage and another 250 m in Couro D'Anta Cave. In 1991, CAP and CGEB successfully linked the river entrance survey to the Craibinha Pit survey with another 1200m (3900ft) of survey.

The ten expeditions briefly reviewed above were greatly limited by difficult access to the cave system. No more than 15 cavers participated in any given year on these earlier expeditions, and with most of those expeditions about one week in length, that's one-fourth the person-power of the 1995 expedition! The cavers from the earlier expeditions used what would be considered primitive survey techniques by modern standards (for example, clinometers were not used). In addition, side passages were not explored, but who can blame them, with all that big stream passage looming ahead. Tragically, the original survey data from these expeditions are lost, but the maps do exist.