I am pleased to return Flag #73, following a most successful expedition to Roraima Tepuy, Venezuela.

As stated in the flag application, members of the Expedition included Cato Holler, Chris Holler, Oliver Holler, Pete Miller, Mary Gratsch, Ric Finch, and Janie Finch.

The purpose of the expedition was to evaluate and photographically document the varied and extreme landforms present both above and below ground on Roraima Tepuy. At 2723 meters, Roraima is the highest of the mysterious tablelands of Venezuela’s Gran Sabana. It was this isolated landscape which had inspired Sir Arthur Conan Doyle’s novel, *The Lost World*.

Although the dates of the expedition per se ran from Feb. 26-Mar. 9, travels in other regions of Venezuela both before and after Roraima were also productive. The entire extended trip ran from Feb. 21-March 16. During a pre-expedition visit to Angel Falls, the Hollers explored a previously unreported talus cave right at the base of the world’s highest waterfall. Post-expedition routes included travels across the Gran Sabana and a trip north to Caripe to Cueva Del Guacharo to not only visit this incredible cavern, but to also witness and record the amazing evening exodus of the thousands of oil birds which roost therein.

Admittedly from the onset, our journey to The Lost World was the most physically and mentally demanding, yet personally rewarding, undertaking in all of my years of exploration. Minor medical emergencies including blisters, sunburn, altitude sickness, insect bites, and gastric upset hit various members of the team, but were dealt with successfully with our medical supplies.

All members of the expedition worked well together, each applying their individual expertise toward our common goals. Dr. Richard Finch’s handling of travel logistics enabled the team to move smoothly from point A to point B with few glitches in between. Without the strong support of our Pemon Indian guide, Roger, and his numerous porters, the trip would not have been possible. Their knowledge, strength, and endurance was truly invaluable.

In order for us just to reach basecamp at the foot of Mount Roraima, a two day, 22 kilometer trek had to be made from our drop-off point, the Indian village of Paraitepui. From there, our journey entailed lengthy travel through open savannahs enduring 99 degree temperatures with little shade. The first night’s encampment was at a small Indian campsite maintained by a family of Pemon Indians located on the banks of the Rio Tec. The next morning, with river levels being up due to recent rains, we crossed two divisions of the Rio Tec with the aid of traverse lines. Shortly thereafter, we crossed the Rio Kukenan with little difficulty. and then hiked steadily uphill through moderate talus slopes until we reached basecamp at the foot of Roraima. We experienced few mosquito problems at the rivers, but despite liberal applications of DEET, most members received numerous bites from the infamous black flies, the Puri Puri. The following morning, another half day’s climb up through steamy cloud forests and steep talus slopes on a
ledge known as “The Ramp” took us to the top of Roraima. At one point on the ledge, we made our traverse beneath the spray of a waterfall pouring off the top of the tepui. No sooner had we summited than one of the daily torrential rain storms hit. We sought shelter beneath an overhanging ledge while waiting for the rain to subside. Just across from us was a sobering sight: in among the rocky crags was the wreckage of a rescue helicopter less than a week old. A German had sustained a fall on the mountain a few days earlier incurring compound fractures. The severity of his injuries necessitated emergency evacuation. Due to inclement weather, it was two days before the rescue chopper could land. The victim was packaged for transport, but as the chopper lifted off, a sudden updraft swept it into a rocky projection causing it to crash on the craggy summit. Both pilot and passenger survived, but it was another two days before the victim was able to be airlifted by another helicopter. The twisted yellow carcass of the crashed chopper proved a fitting reminder to all of us as to just how serious an impact a misplaced step or loss of balance could have on any one individual and the ultimate outcome of our expedition in this alien environment.

Alien environment, may actually be an understatement of our newly-gained surroundings. Despite all of our extensive previous research, nothing had fully prepared us for the otherworldly terrain atop Mount Roraima. No amount of photography would ever do it justice, though we would certainly attempt it. Try to picture, if you will, being transported to another planet where the mist-enshrouded landscape is dominated by the most bizarre-sculpted black rock pinnacles, hoodoos, stone mushrooms and arches imaginable, where pink sand and stony depressions support millions of quartz crystals weathered from the rocks as well as miniature gardens of colorful plants, totally unfamiliar to us. The majority of these plants are known only from the tepuis, and over half of these are unique to Roraima.

Equally impressive are the unusual animals of Roraima. Many are melanistic, the black coloration giving them protection from the intense ultraviolet rays of the sun as well as reducing water loss and providing camouflage against the black rocks coated with cyanobacteria or blue-green algae. During our stay, we observed the following black organisms: aquatic beetles, tarantulas and smaller spiders, a millipede, and dragonfly larvae. The latter insects were found both above ground as well as in the underground streams. Nearly everyone’s favorite creature was Oreophrynella, the tiny black frog, with yellow markings on its belly. This little amphibian is so primitive it is unable to leap or swim, but can only waddle its way awkwardly over slick rocks. When approached, it will often roll itself into a little ball and disappear down the nearest crevice or shallow pool where it will play possum. The endearing creature is endemic to the tepuis and is more closely related to the frogs of Africa than to others in South America. This suggests that it is literally a “living dinosaur” dating back to the days of the supercontinent Gondwanaland. In addition to these animals, we observed a variety of birds and noted small mammal tracks (probably mice) along a dusty ledge in one of the cave entrances. An oilbird was seen to fly from this same cave. I mentioned the dragonfly larvae underground. Other subterranean creatures encountered and photographed within Roraima’s caves included isopod crustaceans, spiders, and a bizarre, tiny white, cave-adapted insect of the order Pscoptera with extremely long antenna and believed to be a new species. In abundance were many of the strange aquatic crickets of the genus Hydrolutus. These large insects can reportedly inflict a painful bite. Chris Holler recorded what may be one of the first underwater videos taken in their natural habitat.
Most visitors to Mount Roraima only endure 1-2 days on the summit. For the purposes of our expedition in studying the varied landforms present, we allowed nearly a week on top. All summit camping was done beneath overhangs or in caves known locally as “hotels”. The second and third days were spent exploring and photographing Roraima Sur Cave. This 16+ kilometer-long cave is unique in the annals of speleology in that it is currently the world’s longest cave in quartzite. The speleogenesis or mechanism of the cave’s formation is still somewhat under debate. Karst caves of this length in limestone are not unusual, but the field of silicate karst and solution in quartz rocks is new. We observed karren or surface karst dissolution above ground on Roraima in the form of rillenkarren and solution pans. The cement in the Roraima quartzites is primarily quartz which is considered to be extremely slow to dissolve in groundwater. However, with the Roraima formation being comprised of 1.8 billion year old sediments, water has had an extremely long time to dissolve these quartz cements. Once these cements are removed, then softer layers of sandy sediments can then be mechanically washed away by the underground waters. The rock’s lithology (some layers are softer than others) undoubtedly plays a major role. Subsequent ceiling collapse or stoping further modifies the contour of the cave passages. Just lightly bumping one’s helmet on the cave roof would often send showers of loose sand down the back of the neck. One recent theory proposes an alkali speleogenesis driven by resident bacteria as the initial force of silica dissolution. Other, more traditional theories, attribute the process to mildly acidic humic acid washing in from the sparse plant life on the surface. It is the humic acid which gives many of Venezuela’s streams their brownish or amber coloration. Whatever the cause of these magnificent underground voids, (and it is probably a multitude of the above mechanisms and perhaps others yet to be proposed), the fact remains that these caves are unusually long and complex. Many maze passages exist within this large system. The cave has 8 horizontal entrances, 6 pit entrances, and 4 windows opening high on the cliff face. Secondary formations (speleothems) are also unusual in the cave. Composed of opal and believed to be bacterially mediated, these range from irregular stalactites to more bizarre massive forms known as champignons.

On the first day of our caving, the group did a through trip in Roraima Sur Subsistema 1 to observe and photograph some impressive underground natural bridges. Entrance was gained through B1 also known as Guacharo Hotel which is where our camp was established. We explored the western gallery and determined that the crawlway connection with Subsistema 2 was sumped. (This would necessitate rigging a vertical entrance into this part of the system the following day.) Next, we negotiated the long, sandy crawl into the parallel gallery, exploring much of the maze and central gallery before exiting from the impressive B3 sink-entrance by climbing up its steep breakdown slope. Next day the S2 pit, a 27 meter deep entrance was rigged into Roraima Sur Subsistema 2 which allowed some of the team to visit many of the deeper river passages of the cave as well an opportunity to photograph two of the window openings on the cliff. Window E4 was visited first and later E1 at the far western end of the system. During the course of the day, much of Subsistema 2 was explored and photographed. Upon exiting that evening, the crew discovered that heavy rains had begun falling, so it was a wet climb back out of the pit. Some surface reconnaissance was being carried out the same day by two of the members. A smaller feature, Indian Cave, was visited and photographed, and many of the deep, rocky crevasse-like fissures were followed on the surface. It was observed that extensive jointing is found within the rocks throughout Roraima’s surface. It is through
some of these deeper fissures that water is allowed to enter the cave systems and play a vital role in their development. In addition, a visit was made to one of the “Valley of Crystals”, where the ground is literally floored with millions of quartz crystals weathered from the adjacent rocks. Incidentally, Roraima Sur Cave Subsistema 1 is also known as “Cave of the Crystal Eyes” due to the number of potholes in the underground stream bed lined with these loose, quartz crystals which have been smoothed and rounded over the years. One might liken it to a series of giant rock tumblers as the water, laced with humic acid, washes sandy sediments in and out of the natural cauldrons which have trapped the crystals.

Having explored the southern part of the tepui, we headed north and spent the next several days exploring the central and north-central part of Roraima. On route was a traverse through another incredible “Valley of Crystals”. Photos were taken at Triple Point where the borders of Venezuela, Brazil, and Guyana come together. As we entered these regions, the rocks became even more fantastically weathered. As mentioned earlier, the extensive jointing as well as the fact that some of the rock beds are softer than others allow the elements of wind, rain, ancient river courses, along with alternating high humidity and then intense sunlight to sculpt these rocks into fanciful shapes like nowhere else on earth. The cyanobacteria and various lichens probably play a role as well in the contouring of these rocks. Temperatures on Roraima ranged from quite warm days to chilly evenings. Our night time temperatures seldom dropped below 60 degrees, but during certain times of the year, the summit temperatures have been known to reach near-freezing.

It is interesting to note that each of the taller tepuis generates its own weather. As Roraima’s cliff face heats up during the day, thermal currents suck up moist air from the forests below, creating the mysterious clouds which often engulf the summit later in the day. With the extreme weathering of the rocks creating a menagerie of fanciful creatures all enshrouded in fog, it is little wonder that these isolated islands in time were once considered to be the realm of prehistoric monsters.

Our campsite in the northern section of Roraima was actually on the Brazilian side and was known as “Hotel Coati”. It was without a doubt the most scenic of our numerous cave camps. It consisted of a large natural tunnel about 100 feet long, twenty feet wide, and 30 feet in height, one end opening into a delightful little ravine with another small cave at its head. The main cave was heavily cross jointed with numerous intersecting side passages and neat columns throughout its length. Soft deposits of sand formed a far more comfortable floor beneath our tents than the usual rocky surfaces had previously.

Some of the group visited El Foso, a classic, straight-walled collapse sinkhole located in a blind valley with an impressive waterfall cascading into its depths. Once again, we had to remind ourselves that we were witnessing an incredible example of silicate karst. This was forming in sandstones, not in carbonate rocks such as limestone or dolomite. The bottom of the sink had weathered into a series of impressive columns. A deep pool of amber water floored the sink and a large joint would allow one climbing access to the bottom in better weather. This would eliminate the need to rappel into the pit. Heavy rains had returned, all vertical gear had been left in one of the southern camps, so alas we could not safely bottom El Foso, so we had to resign ourselves to photodocumentation from the rim of the pit.

On our return from El Foso, we also got a taste of the stone forest known as The Labyrinth. This maze of black pinnacles is also joint mediated and would be a good place for one to get lost from
the rest of their group, if not extremely careful.

After a good part of a day’s travel back south over the irregular plateau, we camped beneath another ledge known as Hotel San Francisco. The following morning, after taking more pictures of the recently-crashed helicopter, we began our early descent through the rainforest serenaded by the soft peeps of tree frogs. After a very brief stop at basecamp, we spent much of the remaining day hiking through the savannah and were pleased to encounter lower water conditions at our river crossings. That evening was spent at the Rio Tec camp where we celebrated our last meal with the Pemon porters who had been such a vital part of our successful expedition. I entertained the team with some magic tricks before we collapsed in our tents. It rained hard most of the night, and most of us took in considerable water despite the drainage channels around the tents. The next morning was clear allowing us a nice 4 hour hike back to Paraitepui where we caught our 2 hour Landrover ride back to Santa Elena and civilization. Hot showers and a soft bed never felt so good!

Following the lead from some of our previous expeditions, we left behind a fair amount of our personal supplies for future use by our porters. In addition, we visited a small school for handicapped students in Santa Elena. We had heard of their needs prior to the expedition, so we had brought down a number of supplies including tooth brushes, toothpaste, paper, pens, pencils, solar-powered calculators, etc. It’s always nice to be able to give something back to a community who hosted us.

Now that we are home, the tedious work begins. Among the 7 members of our expedition, an estimated 8,000 or so digital photos were taken along with some video footage. It will take some time to edit, organize, and analyze these. In time, we should have a complete documentary of our expedition both above and below ground as we journeyed through the various unique landforms of The Lost World.

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References:


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This flag photo was taken at Triple Point on Mount Roraima’s summit where Venezuela, Brazil, and Guyana meet. Back row, left to right: Pete Miller, Janie Finch, Ric Finch, Cato Holler, Mary Gratsch. Seated: Oliver Holler, Chris Holler