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Union Internationale de Spéléologie (UIS)
Commission on Volcanic Caves

e-NEWSLETTER



<http://www.vulcanospeleology.org/>



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regularly since December 22, 1993.
The Newsletter is available free of
charge to all members of the
commission, and to others who are
interested in Volcanic caves.



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MISSION STATEMENT

The UIS Commission on Volcanic caves encourages exploration and scientific investigation on volcanic caves, and hosts the International Symposium on Vulcanospeleology about every two years



COVER PHOTOS

Top:

Lava rolls and an intact floor In Cascajo Cave. Photo: John Brush.

Bottom:

The entrance of Triple Volcan, where too many ropes is hardly enough (for a safe descent). Photo: Laurens Smets.

Members of the Commission on Volcanic Caves include:

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Bosted, Peter	USA	Mills, Kirsty	United Kingdom
Brush, John	Australia	Mills, Martin	United Kingdom
Buhrich, Alice	Australia	Montserrat-Nebot, Alfred	Catalonia (Spain)
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Butler, David	Australia	Nunes, Joao	Portugal
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Cooper, Ben	United Kingdom	Priolo, Giuseppe	Italy
Cornish, Bob	USA	Richards, Bob	USA
Costa, Manuel Paulino	Portugal	Rose, Mary	USA
Davis, Emily	USA	Rowe, Paul	New Zealand
De Swart, Herman	Netherlands	Smets, Laurens	Netherlands
Espinasa-Pereña, Ramón	Mexico	Smith, Garry	Australia
Foran, David	USA	Smith, Stephen	USA
Forti, Paolo	Italy	Starr, Linda	USA
Francis, Tim	United Kingdom	Stefánsson, Árni Björn	Iceland
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Frantz, Peri	USA	Stoffels, Dirk	Australia
Fröhlich, Dominik	Germany	Szentes, George	New Zealand
Frumkin, Amos	Israel	Ton Ngoc, Bao	Vietnam
Garlan, Arnaud	France	Toulkeridis, Theofilos	Ecuador
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Gracanin, Tomislav	USA	Urban, Jan	Poland
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King, Lisa	USA	Wachter, Florian	Germany
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Laumanns, Michael	Germany	Whitby, Gary	Australia
Lillington, Andrew	United Kingdom	Woo, Kyung-Sik	Republic of Korea
Lindenmayr, Franz	Germany	Wools-Cobb, David	Australia



Editorial

It is an honor for me to be in charge of the edition of this Newsletter and even more so with the permanent guidance of our president. I learn a lot from his corrections and advice.

John tells me that on his return from Galapagos to Australia, he was able to see from the plane, in the distance, beyond the Andes Mountains, the unexplored volcanic region of Payunia, about which we once spoke at the ICEK in Barcelona, Spain: <https://www.youtube.com/watch?v=aOxdO7UIFsQ&feature=youtu.be>

For this issue we were preparing a new paper related, again, to a cave in that region, in which an important biological community was found. During this time the local peasants continue to inform us almost weekly about the discovery of more caves, always within a private field. So, we are preparing two field trips: one in August with the owner of the field, speleologists, farmers and drones, and another in September with directors of the National Network of Private Nature Reserves. We dream that this will be the first private nature reserve in the country specifically for caves.

That is why we thought it would be better to leave our report for after this fieldwork, not before. Only one cave was in this project a few months ago. Now there are already seven!

Caving is being a kind of pledge of peace in this convulsed, selfish, violent world. It is a refuge for good people who want to know Nature, protect it, love it. We must preserve this bunker of peace, our commission. And to continue dreaming, in our case, that the volcanospeleological community of the world can visit us one day. A dream that John Brush shares, because of what we said at the beginning.

In this issue, the Commission shows that we have a powerful weapon: perseverance in work and in ideals.

Carlos Benedetto
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President's column

Greetings

It was great to be able to catch up with some of you in April during the 21st International Symposium on Vulcanospeleology in the Galapagos Islands. The ISV was a thoroughly enjoyable experience and I thank co-convenors Aaron Addison and Theo Toulkeridis and their team of helpers and trip leaders for their efforts. You can read more about ISV21 elsewhere in this issue.

Meeting of the commission

At the end of the final ISV21 presentations session, the commission convened a short meeting in which all participants were invited to participate.

Major outcomes of the meeting were to:

Note the resignation of Gregory Middleton, who had advised the commission late last year of his intention to resign from the position of Vice President, effective on the date of the commission meeting at ISV21;

Formally thank Gregory Middleton for his strong support for the commission and its activities, especially the ISVs, over a period of several decades, including as Vice President since 2017;

Appoint (by popular acclamation) Dominik Fröhlich (Germany) as the new Vice President;

Agree that the next ISV (ISV22) should be held at La Palma in the Canary Islands in 2026, subject to an acceptable framework for the symposium and associated field trips being agreed with the commission in coming months; and

Thank Aaron Addison and Theo Toulkeridis (co-convenors) and the team of organisers and trip leaders for organising a very successful and enjoyable symposium.

Task Force Group to develop significance criteria for volcanic caves

As a follow-up to a suggestion made by Prof Kyung Sik Woo during his presentation at ISV21, members were invited to participate in a proposed task force group to develop criteria for assessing volcanic caves of international significance. The level of response from members was very pleasing and the task force has now been established. Several members of the task force group have already offered detailed comments. However, it does concern me that nobody has stepped forward and offered to take on the role of chairing the group. I am not able to do this.

Without a chair-person to direct the work of the group, I fear that this important initiative will languish.

ISV22

As noted above, the commission is aiming to convene ISV22 in the Canary Islands in 2026. I had hoped we would be able to provide a few preliminary details in this issue of the newsletter. However, with European summer holiday season ramping up, it is proving to be difficult getting key officials to focus on an event that (to them) seems to be way off into the future. Stay tuned.

John Brush

President

UIS Commission on Volcanic Caves



Report on the 21st International Symposium on Vulcanospeleology, Galapagos Islands

John Brush and Dominik Fröhlich

In April 2024, members and friends came together in the Galapagos Islands for the 21st International Symposium on Vulcanospeleology (ISV21).

The focus of ISV21 activities was on Santa Cruz Island, and in particular, in and around Puerto Ayora, which is the largest town in the Galapagos Archipelago. With a population of around 13,000, Puerto Ayora was a very fine base for the ISV with excellent meeting facilities in the local community hall, a wide range of accommodation options and plenty of choices for dining and socialising, all within easy walking distance. All the pre-symposium field trips, as well as some of the post-symposium field excursions, were to caves in the highlands of Santa Cruz, a convenient 15 to 30-minute taxi ride from Puerto Ayora.

The ISV was attended by 34 registered participants from eight countries (USA, Australia, Ecuador, Korea, Japan, Spain, Germany and the Netherlands). In addition, there were seven organisers/ trip leaders from the USA and Ecuador. Several staff from the Charles Darwin Foundation, based in Puerto Ayora, including Rr Rakan A. Zahawi, the foundation's Executive Director and Dr Lenyn Betancourt, also attended the presentation sessions and some of the other activities.

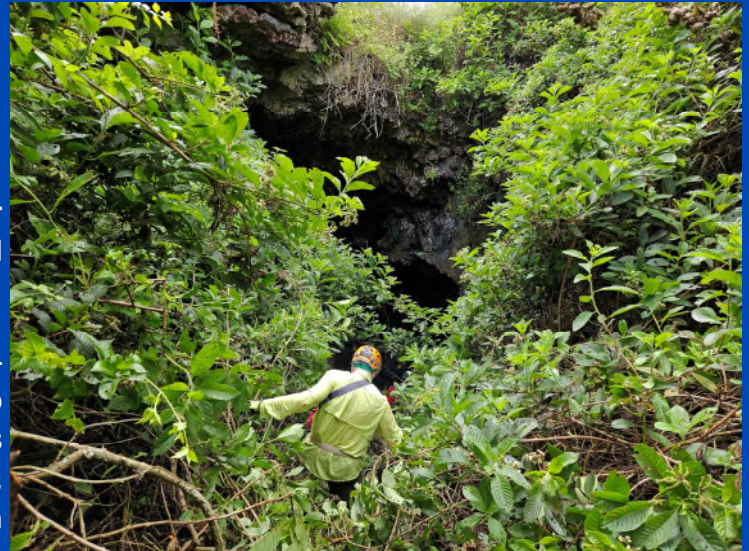


Fig. 1 - Main access point to Sistema Silvana, possibly the longest cave in the Galápagos. Photo: Laurens Smets.

Presentations

The number of presentations was relatively modest, but they were of a high quality and covered a broad range of subjects:

- 1) A keynote address on the geodynamics of Ecuador and the Galapagos Islands (Theo Toulkeridis).
- 2) An update on exploration of volcanic caves in the Galapagos since 2014, covering the discovery of more than 20 caves, including Sistema Silvana where more than 3.7km of passage was mapped over three days in 2020 (Aaron Addison).



Fig. 2 - Iguana Bones in Sistema Silvana. Photo: John Brush

3) An overview of work of the local Research Station of the Charles Darwin Foundation (Rakan Zahawi).

4) Discovery, exploration and documentation of new volcanic caves in Uganda and Kenya (Dominik Frölich).

5) Review of a 20-year project to explore and map the 150km Delissea cave system in Hawaii, which was named after a tree, that was thought to be extinct, but was found in an entrance pit (Peter Bosted).

6) Documentation and recording of caves on Lanzarote in the Canary Islands (Laurens Smets).

7) Speleogenesis in volcanic settings and a proposed classification scheme for (a) primary caves and (b) secondary caves in volcanic rocks. Both presentations were the result of a collaboration between Stephan Kempe and Laurens Smets and were delivered by Laurens.



Fig. 3: - Negotiating a tangle of vegetation in a collapse pit (puka) in Sistema Silvana. Photo: John Brush.



Fig. 4 - Multiple levels, representing the surface of successive lava flows, are common in Cascajo Cave. Photo: Laurens Smets.

8) Collapsed volcanic pits and associated surface depressions (locally known as 'juba') in northern Israel (Amos Frumkin).

9) Description of lava folia, a rare and previously undescribed speleothem type that has been found in two lava caves in Hawaii (Norman Thompson).

10) Human use of caves in Hawaii for temporary shelter and refuge, commencing with early human settlement around 1000 years ago and continuing into the nuclear age when some caves were set up as potential fallout shelters (Peter Bosted).

11) Management and protection of volcanic caves in southeastern Australia (John Brush).

12) An overview of international workshops on cave conservation and restoration (Val Hildreth-Werker).

13) Interesting formations seen in volcanic caves during mapping work with Peter Bosted in Hawaii (Emily

13) Interesting formations seen in volcanic caves during mapping work with Peter Bosted in Hawaii (Emily

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Davis and Mike Warner).

- 14) Historic review of the exploration and documentation efforts of Catalan speleos in volcanic caves around the world over a period of more than 60 years (Alfred Montserrat-Nebot).
- 15) Exploration and documentation of volcanic caves in the Cascades area of Oregon, Washington and northern California in the USA (Garry Petrie).



Fig. 5—Searching for bones and invertebrate specimens in Sistema Silvana. Photo: John Brush.



Fig. 6—Negotiating a 3m lava fall, one of several climbs in Cascajo Cave. Photo John Brush.

- 16) Proposals for recognition and assessment of volcanic caves of national and international significance (Kyung Sik Woo).

In addition, the Mayor of Santa Cruz, Ms Fanny Uribe López, welcomed participants to the island in a brief address and wished them well in their activities.

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Aaron Addison and Theo Toulkeridis, the ISV21 co-convenors, have commenced work to compile the ISV21 proceedings. When completed, the proceedings will be available in digital form and will be published on the commission's website

Pre-Symposium field trips

The pre-symposium field trips to caves in the highlands of Santa Cruz were described in information releases (such as in *Newsletter 81*) as being for the purposes of exploration/ surveying, photographic documentation or science.

Some good work covering all three objectives was undertaken over the allotted four days, including



Fig. 8 - Tube-in-tube structure in Cascajo Cave. Photo John Brush.



Fig. 7 - Impressive lava benches and levees in Cascajo Cave. Photo: Laurens Smets.

completing the survey of Cascajo Cave, photo documentation in Cascajo Cave, Sistema Silvana as well as several others, and collecting (under permit) bird and animal bones and invertebrate specimens from several caves for the Charles Darwin Foundation Research Station. However, we understand there was some disappointment over the limited extent of the work efforts, particularly in relation to exploration and surveying. It seems there were several reasons for this. As it had been several years since the last work trip, some caves, such as Cascajo and Sistema Silvana had become 'lost' in the jungle and required new tracks being cut to their entrances. Heavy work commitments hampered preparation efforts in the leadup to the trips, and some participants did not seem to be fully aware of the work focus of the pre-symposium trips and had not come suitably prepared.



On the first day, a party visited Sistema Silvana which, when fully surveyed, is likely to be the longest known volcanic cave in both the Galapagos and South America. Very few people have ever visited this cave. As it was several years since any cavers had visited the cave, it was first necessary to re-establish an access track through thick undergrowth. The volunteer path-hackers started three hours earlier than the study team and reached the entrance just before the main party. Everyone then headed underground for familiarisation, systematic photographic documentation and sample collecting. One of the key objectives of the study work in this and other highland caves was to look for bones of terrestrial iguanas to provide evidence that these creatures once lived in the highlands, as now they occur only in the dryer areas close to the coast. Surveying of the cave has not been completed and as it takes several hours to reach the unsurveyed sections, the logistics of how best to continue the work have yet to be resolved.

Fig. 9 - Tube-in-tube structure in Cascajo Cave. Photo John Brush.



Fig. 10 - Lava rolls and an intact floor in Cascajo Cave. Photo: John Brush.

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Another party visited the Cerro Mesa Ecological Reserve (a highland tourist ranch) with the aim of locating Cerro Mesa Cave. Despite the best efforts of the property owner, and bush-bashing efforts by a ranch employee and symposium participants, the entrance could not be found. However, it was a pleasant day with a hike to the bottom of a pit crater chamber, photographing giant tortoises and enjoying cold drinks in the ranch visitor centre while waiting for transport back to town.



Fig. 11 - Professor Theo Toulkeridis delivering his key note presentation. Photo: John Brush.

On another ranch not far from Cerro Mesa, a party attempted to relocate Cascajo Cave with the principal objective of completing the cave survey. Mapping commenced in 2014 during ISV16 pre-symposium field trips and continued through until 2020 when efforts were interrupted by covid-related travel restrictions. Unfortunately, as nobody had been to the cave in several years, no signs of the access track remained. At first, only a short (but beautiful) up-flow segment was found. Even with the property owner's help, it took many hours to locate the main cave in dense regrowth forest (jungle) that was full of fire ants (*"don't stop, and if you do, make sure you stand on a rock"*).

It was a relief to locate the main section of Cascajo as it is one of the most spectacular caves known on Santa Cruz. It has beautiful formations, five lava falls/cascades, lava pools, numerous lateral benches, and as many as nine internal ceiling levels. Such was its reputation, that many ISV participants expressed interest in joining a return trip the following day. On that trip, the group divided into several teams to rig the pitches, complete the mapping task, collect invertebrate specimens and bird and animal bones for the Charles Darwin Research Station and to undertake detailed photo-documentation of the cave.

In addition, hastily-organised trips were arranged to well-known caves such as Bella Vista and Soyla for familiarisation and photo documentation.



Fig. 12 - Aaron Addison reviewing exploration and documentation efforts over the past decade. Photo: John Brush.

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Post-Symposium field excursions

Participants were able to select from three excursion options: (a) stay on Santa Cruz Island to visit more caves in the highlands; (b) travel by boat, a 2.5-hour trip each way, for a day trip to Floreana Island; or (c) travel by boat to Isabela Island for a two-day field trip.

On Floreana Island, the group visited Post Office Cave that has a photogenic saline tidal lake; and Barn Owl Cave which is an important archaeological site. Both caves were visited with permission from the Galapagos Islands National Park and the party was accompanied by a park ranger for the day.

The Isabela group visited one of the largest craters in the world, the Sierra Negra Volcano, where one of the highlights was an active sulphur field. On the way back to Puerto Villamil, the only village on the island, the group visited Sucre Cave, a small but complex cave with a range of excellent speleothems and other volcanic features as well as large areas of gold-coloured actinomycete bacterial colonies. The following day, the group visited the spectacular Triple



Fig. 13 — It was either a swim or a ride in a small dinghy to reach shore near Post Office Cave on Floreana Island. Photo: John Brush.



Fig. 14 - Wading along the tidal lake in Post Office Cave, Floreana Island. Photo: John Brush.

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Volcan, a huge drained magma chamber about 100m deep. The group was lucky to be there at the right time of day to see a beam of sunlight reaching down to the bottom of the cave, illuminating the whole chamber. It was indeed a memorable conclusion to the Isabela field excursion.

For participants who stayed on Santa Cruz, or returned there after the day trip to Floreana, there were trips to well-known caves and other features in the highlands. Most of sites visited were on ranches that have been developed for tourists. A major attraction for visitors to these ranches are the iconic giant tortoises, but cave visits are also popular and some caves, or segments of them, have rudimentary lighting installed. ISV participants had permission to visit the lit sections, but were also able to visit undeveloped sections and other nearby caves. Among the caves visited were Bella Vista Cave, Soyla Cave, Gilda Cave, Primicias Cave and El Chato Caves. Some participants, who had also attended the previous Galapagos ISV in 2014, recognised that the El Chato Caves were previously known as the Tortuga Crossing Caves. The Chato 1 and 2 caves visited in 2014 are further up-flow and recent investigations suggest that what was



**Fig. 15 - Negotiating rough volcanic terrain near Barn Owl Cave, Floreana Island.
Photo: John Brush**



**Fig. 16 - Selecting the least-worn ropes to aid descent to the pitch into Triple Volcan on Isabela Island.
Photo: Laurens Smets**

then known as the El Chato Ranch is now called Rancho Terramar, which appears to base its marketing around the twin themes of love and pirates!

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Social activities

There were just two social activities listed on the ISV Program. The welcome party on the first night on top floor of the Flamingo Hotel and a farewell buffet banquet at the restaurant on Rancho El Chato in the highlands. However, in many ways, the whole ISV was a social activity. There were ample opportunities on cave trips, during meals, while sampling the local brews in a bar, or sitting in twin-cab SUV taxis and interisland boats for re-establishing old friendships, renewing acquaintances and meeting new people. It was all very convivial and enjoyable. However, as one relatively new-comer to the commission expressed it: *“And it also seems that the community of vulcano cavers are nice folks, maybe a bit old and could party more, but anyway...”*.

Acknowledgements:

On behalf of all participants, the authors thank the co-convenors (Aaron Addison and Theo Toulkeridis) and the organisers/ trip leaders (Scott Lynn, Rick Toomey, Elizabeth Winkler, Hein Angermeyer and Aslee Addison) for their efforts in making ISV21 an enjoyable, interesting and rewarding experience.



Fig. 17 - Looking down into the throat of the Triple Volcan shaft. Photo: Laurens Smets



Fig. 18 - A beam of sunlight illuminating the massive interior of Triple Volcan, a drained volcanic shaft. Photo: Scott Linn.

Fig. 19 - Lava floor levee and gold-coloured actinomycete colonies in Sucre Cave, Isabela Island. Photo: Alfred Montserrat-Nebot.

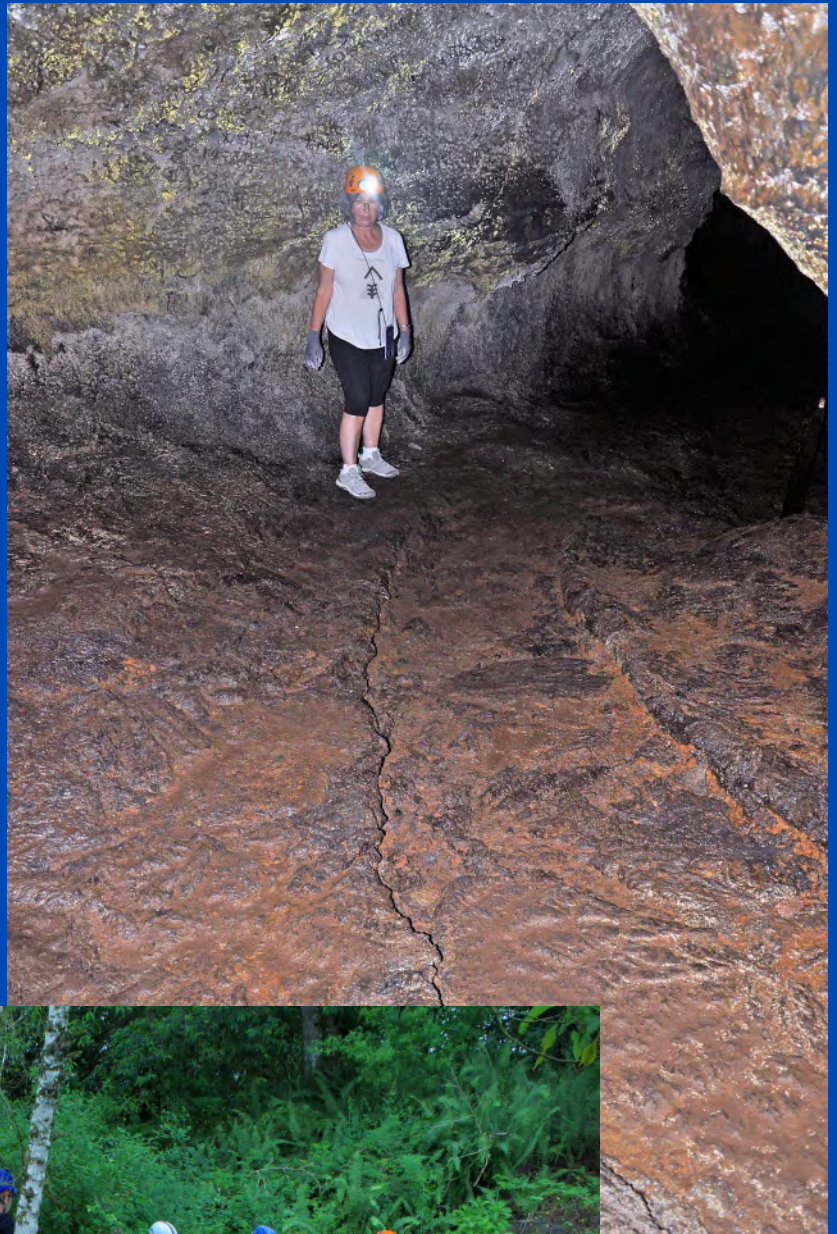


Fig. 20 - ISV participants entering a developed section of Chato Cave. Photo: John Brush.



Fig. 21 - A disturbingly healthy crop of lampenflora in a cave where the lights are left on all day long. Photo: John Brush



**Fig. 22 - In recent years scoria has been spread in several commercial caves to enhance the visitor experience. While it does help to keep visitors' footwear clean and reduce mud tracking, it can also obscure floor features.
Photo: John Brush.**



**Fig. 23 - Household rubbish dumped in an intermediate entrance to the (undeveloped) down-flow segment of Bellavista Cave.
Photo: John Brush.**

Sad News: John Roobol

Dear friends,

We sadly learned that our friend John Roobol passed away on May 5 of this year. Just before he died, he published the book *Franklin's Fate* on Franklin's 1845 North-West Passage expedition.

John Roobol was instrumental in the first expedition to explore and document lava caves in Saudi Arabia.

John Pint

Cheers from Mexico

24 June 2024



In memory of John Roobol, John Pint has kindly agreed to the Commission publishing an excerpt from his book *Underground in Arabia* which documents the story of the first expedition, to hunt for lava tubes in Saudi Arabia.

John notes that the visit to Jebel Hil (note the spelling) Volcano was quite an experience and to this day no one has set foot inside the lava tube which extends from the volcano.

The Caves of Kishb

[Chapter 13 of *Underground in Arabia*]

by John Pint

The project to hunt for caves in the vast, volcanic wastes of western Saudi Arabia, got its start with a little push from “the grand old man of US caving,” (*and foundation President of the Commission on Volcanic Caves - Ed*) Bill Halliday. No sooner had I arrived at the Saudi Geological Survey in Jeddah, than I was handed a computer printout by my new boss, Mahmoud. “Someone has sent you an Email, John,” he told me. Well, I didn’t even have an Email address yet, so I figured this must really be important...and so it was:



“I notice there are lava fields not far from Jeddah,” wrote Halliday. “Are there any lava tubes to be found?”

Well, I repeated that question to quite a few French, US and Saudi geologists during the next few months, but none of them could give me an answer. “The man you need to talk to,” they all replied, “is Dr. John Roobol. He spent years in those miserable lava fields. Right now, he is on leave, but he’ll be back.”

Nearly a year went by before John Roobol finished sailing around the world and by then I had forgotten all about searching for lava caves, completely distracted by limestone caves filled with fascinating calcite and gypsum formations, great caches of mysterious bones and several fiercely blowing leads. But then, one fine day, the doorway to my office was filled with the frame of a big, big man. “So you’re interested in lava tubes,” boomed the voice of John Roobol and there and then began a new chapter in Middle East speleology.

Yes, said Roobol, at last answering the question of Dr. Halliday: there were lava tubes in Saudi Arabia. Many of them he had spotted during helicopter flights over vast stretches of lava and he had actually entered one of them, where he found beautiful, long, spindly lava stalactites hanging from the ceiling. However, to his knowledge, that was the extent of lava-cave exploration in Saudi Arabia, with no maps or surveys ever having been carried out.

I learned that there are about 89,000 square kilometres of lava fields on the Arabian Shield, which covers most of western Saudi Arabia. Reaching the majority of these areas by helicopter is difficult, due to the great distances involved, refuelling problems and, of course, astronomical costs. If, however, you have a vehicle with good tires and several spares, you can attempt to navigate the Bedouin tracks that criss-cross the lava fields, locally known as harrats. “The shortest distance between two points, when you’re driving across a harrat, is not a straight line,” said John Roobol, because the sharp-edged chunks of basalt are death to tires. You have to stay on the tracks, but the tracks go every which way.

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Obviously, a guide is invaluable for Harrat navigating and I was delighted when Roobol offered to lead our first vulcanospeleological expedition to Jebel Hil, a scoria cone near which he had seen at least a half dozen lava-tube entrances some years earlier.

Jebel Hil (also spelled Jabal Hil) is located in Harrat Kishb, a lava field located only some 250 kilometres from Jeddah. I thought my



caver-trainees would be delighted about this, but they told me “Those lava fields are thick with mosquitoes and if you light a lantern at your campsite, you’ll see big scorpions running towards it in minutes...and every pool of water you find out there has huge black snakes in it which are famous for jumping right out of the water and attacking anyone foolish enough to come near.”

It sounded delightful, but we had heard even worse stories about what is supposed to lurk inside limestone caves and had lived to tell the tale. So, in November of 2001 our expedition of ten men and one woman (my wife Susy, of course!), drove off towards Harrat Kishb. Our hopes for success on this mission were greatly bolstered by a bit of pure luck. By sheer co-incidence, John Roobol had been handed a set of photographs, taken somewhere in Kishb by a hunter. Several imposing lava-tube entrances were shown, proving that large walk-in caves were waiting for us, but, unfortunately, we had no clue as to exactly where the pictures had been taken.



Because we had gotten off to a typically late start, darkness had already fallen as we approached Wahbah Crater, a monstrous, two-kilometre-wide hole in the ground created by a series of explosions caused by spring water reaching a deep area of thermal activity. This is a favourite hiking and camping spot for foreigners living in western Saudi Arabia and easy to reach by road.

Rough terrain: Mahmoud Al-Shanti in Harrat Kishb

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However, our caravan would have driven straight over the crater edge if our fellow caver, Mahmoud Al-Shanti hadn't wisely stopped just beyond a "barrier" of three side-by-side oil drums. In the lights of our three Land Cruisers and one truck, we walked forward a few steps and discovered we were right on the edge of a 200-metre drop to the bottom of the crater! This, it was decided, was a fine place to camp. "The strong breeze will keep away the mosquitoes," said Mahmoud. Apparently there were no sleepwalkers in the group and no-one minded camping four metres from the brink of a deep chasm.

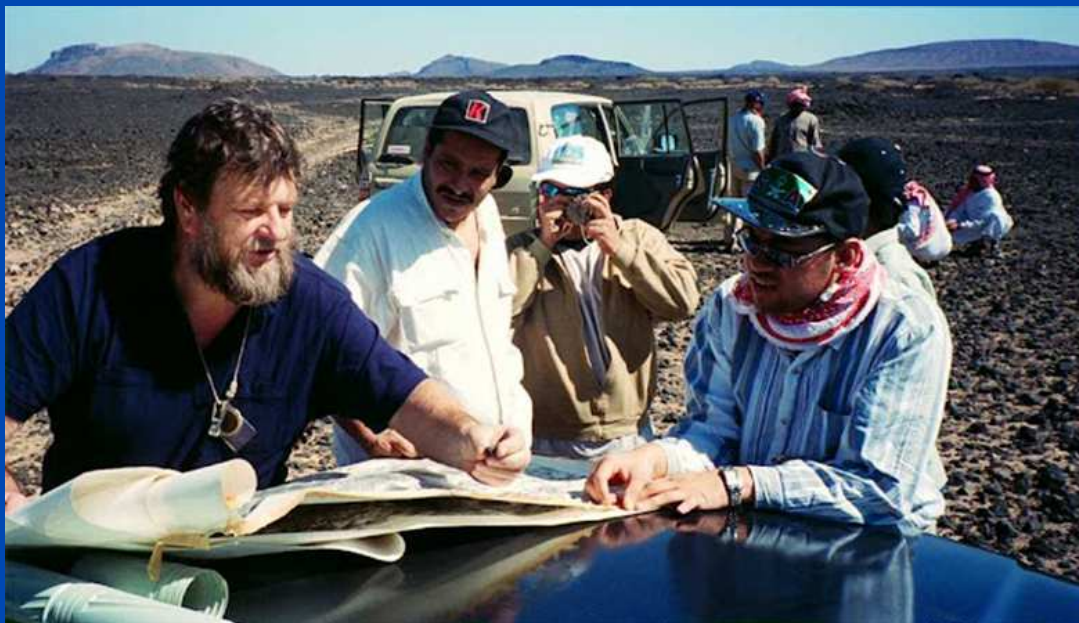
Stuck

For hours we worked our way through great black blankets of volcanic rubble, broken by occasional smooth, flat areas dotted with acacia trees. In one of them we found "the only thick sand I've ever seen around here," according to John Roobol and, of course, we managed to get our ancient pickup truck hopelessly stuck in it. After doing our best to burn out the engine, we finally resorted to the infallible way to get out of the sand: we let the air in our tires down to 15 lbs, drove right out, and then spent a very long time pumping the air back in, using my 12-volt air pump.



Wahbah Caldera

At last, we found ourselves on top of a somewhat flat place alongside Jebel Hil and - lo and behold! – while



John Roobol, left, guides us through Harrat Kishb lava deposit

searching for a good camping spot, we spotted a dark patch on a low wall. This proved to be a vertical cave entrance about 20 metres high. Leaning over the edge, spacious tunnels could be seen going off in opposite directions. Our first lava tube!

We set up camp nearby, ate and decided to go have a look at the series of holes proceeding from Jebel Hil.

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A ten-minute drive brought us to a look-out point right beside the volcano. We had a magnificent view of the flat plain below us but, alas, couldn't see the line of collapses from this position.

"You can see everything from the top of volcano," remarked John Roobol, who (as is his way) immediately began climbing. Well, it was about 4:45PM and it looked like we could just make it to the top and back before sunset, so we all followed him.

Roobling up the Volcano

Ah, but this "Hil" is not a "hill" up which one can merrily prance while filling the air with the sound of music! No, I swear the sides of this volcano are as close to

90 degrees as I would ever want to get and only 20 metres or so on the way up you could see almost every member of the group hanging onto some tiny knob of rock, the only thing solid in a sea of loose scoria (which is like lightweight gravel), almost everyone, that is, because Abdulrahman, the biggest guy among us (excluding JR, of course) was dashing up that exasperating mountain like a rabbit. "He's a bedu; that explains it," I said to myself, but then who did I see right behind Abdulrahman, but Saeed, who is not a bedu and who usually looks terrified every time he has to do a rappel.

"Gulp, I guess if they can do it, so can I," I muttered and began inching my way up that wretched slope, which grew ever steeper as the few handholds were replaced by fine scree. By then I was halfway up and could see the silhouettes of my two trainees on top of the cone. I had to keep going.



View from the tent



We made it! John Roobol and Susy Pint on the rim of Jebel Hil

It seemed as if an eternity passed before I made it. After catching my breath, I began to take pictures of the magnificent interior of the crater, in which you could see a wide, flat "ledge" which had once been the surface of a lake of lava, and the collapsed hole through which lava had flowed into... yes, on the plain far below you could just discern one of those collapses in what must be a mighty impressive lava tube.

And then I heard a female voice. I couldn't believe it! Susy's head popped over the edge! Later she said, "When I saw that you had made it, I knew that I could too." Now tell me, is this a compliment?

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John Roobol and Ghassan came over the edge next and he was the last. As we walked along the crater's narrow rim, John enthusiastically described Jebel Hil's geology and history. Meanwhile, sunset was approaching and we were wondering just how we were going to get back down. "Well, certainly not the way we came up," said John. "It's much too steep. We'll go down another way."

We continued walking a lot farther and then checked the slope. It was even steeper than where we had climbed up and 100% scree. Besides, it looked like there was a sheer drop about halfway down.



Looking down into the Jebel Hil crater

"John, how did you go down last time?"

"Well, now, the last time I was here, as you may recall, was by helicopter."

"You mean you've never climbed down before?"

"Nor up."

Burnt Bottoms

This explains how six apparently rational beings sat down on a nearly vertical slope and tried to slide down on their posteriors, hoping they wouldn't make the small mistake that could start them tumbling down the volcano side like snowballs.

Well, most of us ended up shredding the seat of our pants, all except JR, who used his rucksack as a sled and came out of it with his backside unscathed.

Somehow, we all survived and may even have achieved fame as the first brave souls to have climbed and butt-tobogged down Jebel Hil. In addition, we had all learned that John Roobol is even crazier than a caver.

The Bed That Ate Shoes

On Tuesday morning we split into two groups. Four valiant souls went to hunt for the lava tube holes below Jebel Hil. They trudged some 12 kilometres over a very rough lava bed, visiting each entrance, noting depth, diameter and amount of collapse, etc. They found ten vents, six of which were collapse openings above a cave floor lying from 22 to 42 metres below.

The lava tube appeared to be about 20 metres high and at least three kilometres long.

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Commented Mahmoud: "There was pahoehoe lava above the lava tube, but what we had to walk over was prickly Aa lava most of the time with irregular, loose chunks ready to break your ankle mixed with thin pieces ready to collapse under your weight. John Roobol kept reminding us to be careful with every step because 'We could all die out here.'" They returned, not dead, but dead tired, around 5 PM, having lost considerable shoe leather. But they had documented a long, east-west oriented lava tube with secondary tubes leading north and south from several of the vents. To this writing, no one has returned to actually step inside any part of Jebel Hil Cave!



Map of the entrances to Jebel Hil Lava Tube, which appears to be at least three kilometres long.

I was in group two, whose mission was to map the three lava caves seen by John Roobol's hunter friend, which we had managed to locate the day before with the help of some Bedouins. I "guided" our driver "Eagle-eye Sa'ad" to the site using GPS coordinates, a method of navigation Sa'ad did not approve of at all. On the way back he asked me not to use the GPS and he got us home in half the time, by an entirely different route!

First Lava Tube Survey

Upon reaching the entrance to the first cave, I think I sent my three Saudi trainees into a state of shock by announcing that they would carry out the first survey of a Saudi lava tube. Susy and I would merely assist.

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We then spent a while practicing how to use the compass, clinometer and Disto digital measuring device as well as how to put data into a survey book. This lava tube is about four metres high, 157 metres long and easy walking all the way. About half-way in, we began to see small basalt stalactites which had once been drops of molten lava. According to John Roobol, the cave was 1000 degrees, walls glowing red, when this happened. Seventy-five metres from the entrance we found a raised side chamber with what appear to be very old hyena, wolf and who-knows-what droppings, surrounded by bones.



Entrance to Mut'eb Cave

Twelve survey stations later we came to the end of the cave and the home of a handful of bats. The floor was smooth, dried mud of undetermined depth, sectioned in a nice-looking pattern. Near here were also a number of "soda-straw lava-mites," thin and delicate-looking, but, of course, hard as rock.

Exiting this cave, I asked the surveyors what they wanted to name it. "Kahf Mut'eb" they told me. This

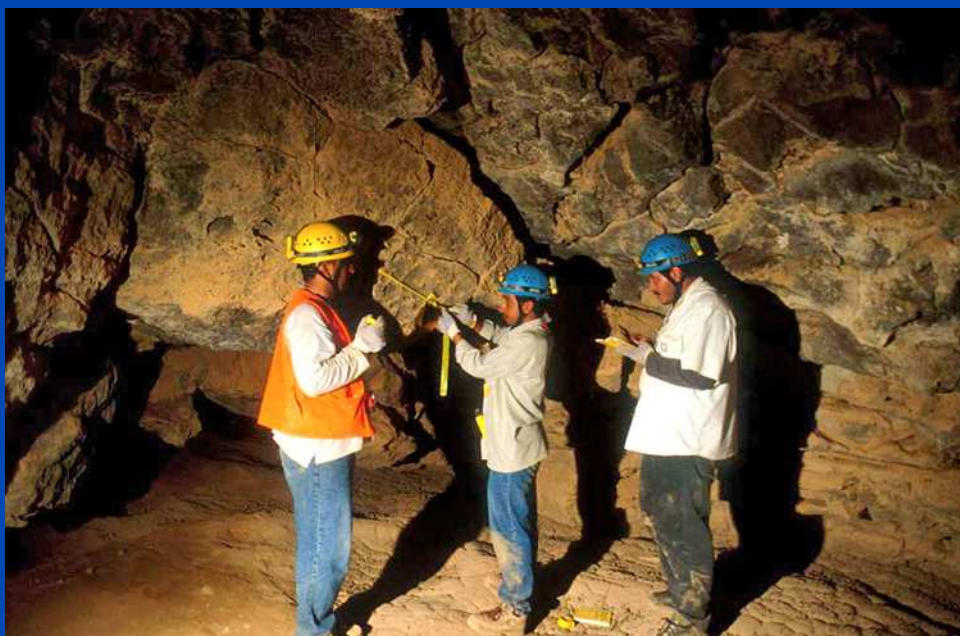


translates as Very-Difficult Cave. Now, if this is how my trainees categorize surveying a flat, smooth easy-walkin' single passage, what would they think of the kind where you have to take readings while lying on your belly in a tight crawlway half full of a gooey mixture of guano, mud and bat urine?

Worn out from their “ordeal” and aching for lunch, the survey crew preferred to stand by and let me have all the pleasure of exploring the 7-metre-deep hole just a short walk away.

Ghostly Cave

There was a big pile of break-down below, on one side of the hole, so I only had to climb the ladder five metres to reach these rocks. I could see passages going off in opposite directions. I walked over to the one heading west. The entrance to it was long and low. I bent over and peeked inside. In the half-light beyond, I could see a large chamber filled with figures. It was as if I had surprised a gathering of skinny goblins and they had immediately turned to stone.



The Kahf Mut'eb team: First survey of a lava tube in Saudi

Slowly – and I do mean slowly! – I stepped into the room. “These statues look like stalagmites,” I thought to myself, “but there are no stalactites above them, and, besides, I’m in a lava tube, not a limestone cave.”

On closer examination I found that these strange figures were made of bird droppings. There must have been fifty of them in there, the tallest standing five feet (1.52 m). Now, one rock dove had flown out of that room when I entered, but what had happened to all the others?



John Roobol strolls past the entrance to Ghostly Cave

I also wondered how old those “guanomites” (as we began to call them) were, as I made my way through them, deeper into the cave. The floor consisted of fine, powdery dirt covered with a thin layer of bird guano. It crunched like snow. At one point, I broke through the crust and my foot sank down 20 centimetres .

This was a new sort of cave experience for me and I regret I was in a hurry and couldn't examine the place better.

I followed this passage to its end where I found stuffy air and a handful of very small bats. A later survey would show I was 135 metres from the entrance. On the way back, I checked out a short passage parallel to the main one. On the floor I found a flat, vaguely L-shaped stick which I thought was a bit curious. I stuck it into a hole in the wall and followed this passage to its end, which was blocked with breakdown through which I could see daylight. However, I couldn't get through, so I made my way back to the collapse entrance the long way.

The eastern passage of this cave also looked interesting, but I was running out of time. I took a quick peek, though, and saw only a few guanomites inside a big room some 40 metres wide. A large part of the wall and roof were covered with a crispy crust of a pure white mineral which I imagined was gypsum. At the end of this room the passage kept going. Good reason for a return trip, I figured and headed back to the cable ladder.

A few months later found us back in Harrat Kishb. This time we decided to pitch our tents on a flat patch of



Mahmoud Al-Shanti with one of the tallest guanomites

black ash just a short walk from Ghostly Cave.

As we stood at the edge of the entrance collapse, I was impressed how easily our team of Saudis were now handling knots, ladders, belaying, cable ladders and surveying. Indeed, with the three geologists handling the mapping, Susy and I could concentrate on photography the whole time.

We spent some time shooting the entrance with the tall guanomites lurking just inside like silent statues,



The Twilight Zone of Ghostly Cave. This lava tube received its name from this forest of around 50 guanomites, some of them nearly two metres tall, deposited by rock doves.

and the remains of a very old stone wall poking out of the guano-covered floor. Then the survey team reappeared, all three of them coughing, rubbing their eyes and wondering how a khawagi (foreigner) had ever talked them into entering a place like that.

The cause of their misery was, of course, the thick layer of white “dust” on the passage floor. But, as good geologists, they had taken a sample of it, which showed it consists mainly of calcium, potassium and phosphate. JR called it “bone dust” and it is so thick inside the cave that a crust has formed on the top which your foot breaks through, sinking into very light powder.

We then took a look at the large room and passage on the east side of the entrance hole. This one led about 100 metres back to a bat chamber where a glimmer of daylight could be seen through the obviously thin ceiling, which sported several brown bat-urine stains.

In this section of the cave, Mahmoud discovered a flat, nearly L-shaped stick much like the one I had stuck into the wall in the small parallel passage, which stick he had also retrieved. Both of them looked like boomerangs and Roobol later remarked that throwing-sticks like these were used in this area by Neolithic people six to eight thousand years ago, a claim he later backed up by showing us pictures of rock art—discovered near the town of Hail—which depict flat-headed people holding L-shaped



Exiting Ghostly Cave via cable ladder



Throwing Sticks Found in Ghostly Cave. The curved upper surface of these sticks provides aerodynamic lift. They are thought to be Neolithic but have never been carbon-dated.

sticks much like the ones in Ghostly cave.

We spent that evening sitting on our carpet, near a blazing fire under a starry sky, playing “Oh Guano!” by the light of a gas lamp and to the hubbly-bubbly sound of a water pipe.

I'm sure it was the first time in the history of Harrat Kishb that such an activity had been undertaken by three Saudis, an Afghan, a Gringo and a Mexican (female, to boot!).

Knotty Curse

The next day we spent some time taking photos in Mut'eb Cave. Deep inside the cave we needed a hiding place for a Coleman lamp and I asked Mahmoud to lift up a big, flat rock lying on the dirt floor. He picked up this rock and suddenly I heard a gasp and "Oh no!"

"What's wrong, Mahmoud?" I cried, "Are you OK?" He put down the rock carefully and pointed at what had been under it.

"Do you know what that is?"

I saw a very old-looking piece of rope with a knot in it.



"Looks like a very old piece of rope with a knot in it!"

"John... This is –how do you call it—a curse."

"A curse?"

"Yes, the knot represents a spell and it was hidden in a place like this so the victim couldn't come and untie it."

Well, here was a whole new use for caves I knew nothing at all about! Anyhow, after a short reflection, Mahmoud uttered a short prayer and carefully untied the knot. I hope that gave some relief to someone somewhere, but if the rope was as old as the boomerangs we'd found, Mahmoud may have undone one of the longest-lasting curses in history.



Happy members of the crew at the end of the first Lava-tube expedition

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Free Plug: John's 174-page book *Underground in Arabia*, published in June 2012, is available on Amazon.



Susy and John Pint at the entrance to Faisal Lava Tube

New caves in the Canary Islands

The June 2024 issue of National Geographic Magazine (Volume 245, No 6) contains an article on some very recently formed lava caves in the Canary Islands.

The 14-page article (titled: Into the Fire Tubes) focusses on exploration of caves on the island of La Palma that formed in lava produced by the eruption of the Tajogaite volcano during 2021. After preliminary surface exploration aided by drones, underground exploration of the new caves commenced in June 2022, just six months after the eruption ceased. The article is accompanied by a location map and seven photos, three of which are stunning double page spreads.

Commission member Pedro Oromí advises that the Spanish edition of the National Geographic issue is much longer and is more visually stunning. The article (Fire pipes: The arteries of the volcano) features as the cover story where it is billed as Under the volcano of La Palma. We enter the labyrinth of tunnels forged by fire. The article runs to 30 pages and includes two maps and 14 photos, many of which are double page images. Some of the photos are also different to the ones used in the English edition.

Octavio Fernández, a local caver and vice president of the Canary Islands Speleological Federation worked closely with the National Geographic team and appears in several of the photos in both editions.

Sharp-eyed readers have noticed some minor errors that escaped the editing process. This is more apparent in the Spanish version where, for example, a skylight and a volcanic pit are stated to be the same thing. Despite such issues, it is a good read and the photos are well worth a close look.

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BAJO EL VOLCÁN DE LA PALMA

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