



*Marcel Dijkstra in the downstream Minarets passage of E. Ram Khur, photo Nikoi Nabisee*

## **Caving in the Abode of the Clouds expedition report November 2022**

### **Meghalaya, India**

#### Introduction

After a break of nearly two and a half years, largely due to travel restrictions imposed during the COVID 19 pandemic, the Caving in the Abode of the Clouds Project exploration resumed in Meghalaya. With the exploration taking place from 6th November to 30th November this year's visit was particularly special in that it marked two significant milestones regarding the cave exploration. The first being the 30th year of the Caving in the Abode of the Clouds Project that first visited Meghalaya in November 1992. The second being 100 years since the pioneering biological study of Siju Dhubakol Cave was made by Kemp and Chopra of the Kolkata based Zoological Survey of India. Their report, published in 1924, is arguably one of the most significant factors in stimulating interest in cave exploration in Meghalaya.

*Report editor Marcel Dijkstra*

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*Shelley Diegdoh in Krem Myrno, photo Marcel Dijkstra*

The Caving in the Abode of the Clouds Project gratefully received a donation of rope from Kordas and funding from the FSE EuroSpeleo Project for the November 2022 expedition. The project continues to be indebted to the ongoing help and support received from The Meghalaya Adventurers Association (Shillong), the Meghalaya State Tourism Department, Officials and Government Departments of Meghalaya and most importantly, the people of Meghalaya, particularly those in the villages in which each year's expedition is based who make the team so welcome, guide them through the forests and help the expedition locate many fine caves.



*Base camp on the Snongrim Ridge photo Kathi Buerger*





## Caving in the Abode of the Clouds team – November 2022



Photo Marcel Dijkstra

**Pre-Expedition Team:** Simon Brooks, Brian Kharpran Daly, Peter Ludwig, Richa Jain, Jos (Yoxz) Burgers, Katharina (Kathi) Buerger, Vijay Chickara, Marcel Dijkstra, Adwait Keole, Robin Sheen, Mark Tringham, Shelley Diengdoh.

**Main Expedition Team<sup>1</sup>:** Simon Brooks, Brian Kharpran Daly, Peter Ludwig, Richa Jain, Jos (Yoxz) Burgers, Katharina (Kathi) Buerger, Vijay Chickara, Marcel Dijkstra, Adwait Keole, Robin Sheen, Mark Tringham, Lindsay Diengdoh, Matt Oliphant, Nancy Pistole, Krishna Patel, Nikoi Nabisee, Tanya Haity, Sai Upekkalar, Shirish Manchi.

**Camp Staff:** Kyrmen (Men) Skhembha Rani, Vinod Biswa, Praluv Pradhan, Eban Rymbai (Kairang) Kerlang Dkhar (Kairang)

**Local guides:** Ryn Mo Syrti (Jalaphet), Raplang Shangpliang (Shnongrim). Lalam Sakhlet, Skhembar Rajee (Cherrapunjee), Nathan Numpui (Muallian) Lunthulung Darnei, Efesia Thianglai and Samuel Ngamlai (Muallian), Lala Darnei, Biatmoi Darnei, Peter Darnei (Muallian).

The expedition owes its success for a major part thanks to 30 years of cooperation with the Meghalaya Adventurers Association (MAA). The MAA gracefully facilitates the expedition store in Shillong. The house of Brian K. Daly is also home to the store and therefore every expedition starts and ends here.

The camp staff usually leaves one or two days in advance to set up the kitchen and office facilities for the expedition team.



Camp staff: Men, Vinod and Praluv leaving base in Shillong



Photo's Marcel Dijkstra

The expedition uses Grayl filter bottles as these as they are tough (up to the rigors of caving), safe to use, and more over they reduce the impact of the waste of having to use packed water in plastic bottles. As most of the caves we visit in Meghalaya have plenty of water, we are never short of fresh drinking water and besides the safety and environmental issues it also saves weight.



*Grayl filter bottle in use in E. Ram Khur streamway, photo David Cooke.*

## **Excerpts from the expedition diary<sup>2</sup>**

### **Saturday 5<sup>th</sup> November**

Simon, Kathi, Mark, Vijay, Adwait arriving in Shillong<sup>3</sup>. Yoxz and Marcel and Robin with help of the new arrivals, sort kit in store ready for Pre-expedition. In the evening everyone meets for a splendid meal cooked by Lindsay's partner Rachellyne and her mum, they have beers and lots of catching up to do.

Early Saturday morning the Camp staff set off in 'Lucy'. Lucy is the name given to the expedition vehicle which was acquired recently thanks to a subsidy of the Government Departments of Meghalaya.



*'Lucy' the expedition vehicle in early morning glow, Muallian camp. Photo Marcel Dijkstra*

## **Sunday 6<sup>th</sup> November**

All participants pay their expedition fee<sup>4</sup>. Vehicles loaded and team set off to the Shnongrim Ridge, reaching the camp just after dark. Dodging the invasion of parasitic Shnongrim tiger leeches (Mark collected some 16 in his tent). The team pitch their tents, had some food and drank some beers.

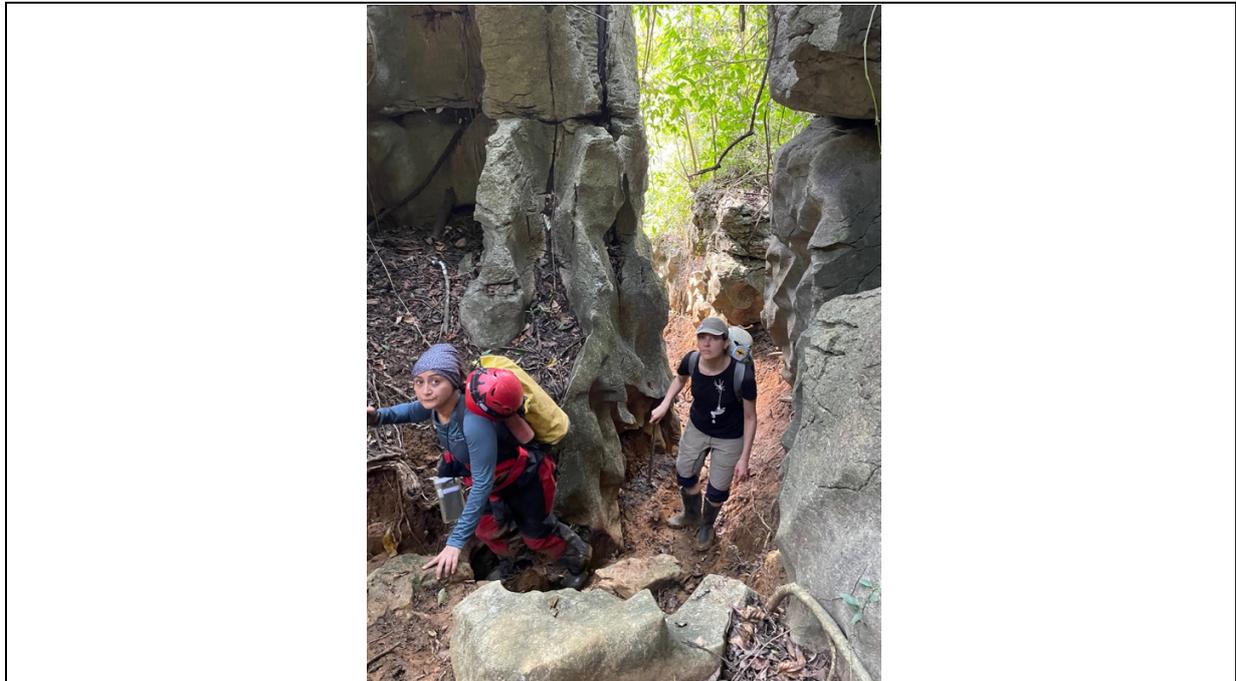
## **Monday 7<sup>th</sup> November**

The team was up bright and early sorting kit and then headed over to Sutgna and onwards to Jalaphet. They met the headman and picked up a couple of local young men as guides, exited from the Jalaphet/Umsohphong road and parked near to Krem<sup>5</sup> Um Satat. They split into three teams with activities described below.

### Krem Water (Team Robin-Yoxz-Kathi-Adwait)

They went with another team up the mountain and redirected toward Krem Water. A passing local showed them the right way and chopped away the excess plants. He also told that it is a very small cave which

the locals use to get water. The team started rigging and removing the makeshift platform that had reached its expiration date. Within minutes the bottom was reached and they started the survey. It appeared not to be a big job. They saw a few interesting animals like huntsman spiders, a frog, wood lice, a blueish crab and a brown blueish gecko. They finished and regrouped with the other team nearby.



*Shelley and Kathi walking up the mountain track onto the Jalaphet ridge, photo Marcel Dijkstra*

### Krem Khlieh Um Soh Jew (Team Peter- Marcel, Vijay and Richa)

Peter started rigging and slowly descended 15 meters down, reached a foothold with loose wet mud and slippery foliage. He made a re-belay to move towards the opposite wall as the cave was narrow and moving downwards. Crossing the re-belay to the opposite wall, a flow of water on the wall was noted. The next drop was some 5 m to a circular room. Another pitch followed. Running short on rope, Peter rigged a handline on the wall just short of the next pitch and left it for the next day.



*Peter rigging the entrance to Khlieh Um Soh Jew, photo Marcel Dijkstra*

Khlieh Ur Sniang (Team Brian, Mark, Shelley, Raplang and 2 guides from Jalaphet)

This team walked northwards from the parking spot back across the road to the northern part of the limestone outcrop. The guides took us under some power lines and across grassland and a padi field (or paddy field – not to be confused with the nickname for Irishmen). After about a 20 minute walk the team arrived at a sink area where two small valleys merge and a large pond had been constructed. A short machete hack through the undergrowth upwards led them to a modest sized entrance about 10m height above the pond. The cave was named Khlieh Ur Sniang (Head of a big drop) After a preliminary look by Shelley, Raplan and the guides the cave was determined as worthy of surveying and

exploring further. Brian, Raplang and guides left for another location and Shelley and Mark stayed to start the surveying. The DistoX2 calibration was checked OK and the survey started at the entrance going in. The cave was an awkward complex of descending passages weaving between large calcite cemented boulders. After 60m of patient work they were rewarded with a sudden break-out into a very large chamber going both up and downwards. Time was short, as route finding off the mountain is difficult in the dark. So, after a quick look around it was determined that the chamber closed with about a further 60m of surveying yet to do, that would await another visit to complete.

## **Tuesday 8 November**

### Khlieh um Soh Jew (Team Kathi, Shelley, Marcel)

The team got off on a quick start but got lost in the shrubs. The locals herd their cows on the mountain which results in a multitude of tracks all over the place. After some time, modern technology was consulted in the form of a phone call to Simon, who gave a useful suggestion as to where to go. Finally, at 13.00 the team was able to descend. Starting first with some re-rigging. Shelley was feeling a bit off today so she only descended to the bottom of the second pitch, whilst Kathi continued rigging and Marcel did the survey alone. The cave continues after the third pitch split in two routes a wet one on the left and a smaller dry one on the right. However, frustratingly, time was up so total depth today reached well over 50 m with another pitch in sight. The third pitch collects water streaming down the walls and collecting in the pitch head. The team noted some bats, possibly Rhinolophidea.

### Mukoi Khur (Team Robin, Yoxz & Adwait)

The team spent a lot of time in the scrubs and various paths to finally find themselves on a hill at the opposite side of a valley and had a good overview of where the cave should be. Returning on their steps they found, after good gardening with a manchette, the cave. The spirits went high when they saw the shaft and after throwing a projectile in it, they realized that the rope would not be long enough. Nevertheless, they rigged the pitch and indeed the rope let the rigger dangling.

With nothing else to do the team returned to the parking near Satat Sink and took waypoints underway in case of exiting the cave tomorrow in the dark.

### Khlieh Ur Sniang (Team Mark, Richa and Vijay)

The team had an easy walk to the entrance and commenced by exploring and surveying two side-passages that branched off from the route surveyed the previous day. These both lead down to the water table with sumped and boulder filled terminations. They then took a few photos on the way and progressed to the large chamber where surveying had stopped the previous day. A loop route was surveyed down and back up the other side of a massive boulder filled central barrier in the chamber. On the east side a side branch was discovered that was quite fascinating with alternating tight portions with squeezes and small chambers. Eventually this series lead back to the top of the chamber again with a climb down of about 4m. A survey loop was completed with only about 10cm mis-tie. After about 4 hours in the cave all exploration and surveying had been completed and an exit was made to pleasant mid-afternoon sunshine, a late lunch break, some surface photography and the walk to the vehicle rendez-vous point. All had found the cave to be of interest and good fun to explore and survey.



*Richa and Vijay in Khlieh Ur Sniang photo Mark Tringham.*



*Richa in Khlieh Ur Sniang photo Mark Tringham*

### Umkrapong Area Recee (Team Simon and Brian)

Have dropped the teams off at Satat Sink Brian, Raplang and Simon, accompanied by local guide (Ryn Mo Syrti) drove Lucy down towards Samassi taking the Jalaphet-Samassi Road. Just before Samassi they turned off the road onto minor roads to bypass Samassi and reach the Umkrapong Road. This was followed to a point just before Umkrapong where they turn off to the right and took a small track for about 200m to a point where they could leave the vehicle. After a bit of jungle bashing with the guide the entrance to **Krem Poh Bhang** was located. A short foray into the cave reached a chamber and a streamway that was ongoing. At the base of the hill in which the cave was located was a small sink with the water most likely appearing in the cave. On the way back to Lucy another small sink was noted. They returned to Satat Sink, where they met Robin and Co, Adwait and Simon then went off and cut through the undergrowth to find the entrance to Krem Satat 2.

### **Wednesday 9th November**

#### Khlieh um Joh Jew (Team Kathi, Marcel, Peter)

Today the team got an early start and reached cave entrance after a twenty-five minute walk. They went down at 11.00. Once again, a little re-rigging and then down. Kathi continued rigging whilst Marcel and Peter continued with the survey.



*Photo Marcel Dijkstra*

At the bottom of the second pitch, they found a purple crab some 20 cm across in size. The fourth and fifth pitches were nicely sprayed with drip water. At the fourth pitch there is a choice of two pitches, a wet and a dry one. They rigged the dry one with rope, but this connects back to the wet one anyhow. They fairly quickly bottomed the cave at minus 70 m. there was no draught, only a little rift in the bottom where noone could fit through.

#### Poh Bhang & Satat 2 (Simon, Mark, Shelley and Brian)

This group returned to yesterday's location and explored and surveyed the cave. It comprised a modest entrance opening up quickly to a large descending passage. At the bottom of the entrance slope a small inward flowing streamway was found likely coming in from the nearby stream sink. This was followed for about 70m with mud banks on the sides and stal formations in the ceiling. The cave terminated at an uninviting sump with scummy water polluted from the nearby coal mining and signs of backing up of flood water.

Before returning to the car Simon and Mark checked out another stream sink close to the car parking location. Wood debris was removed from the small drafting entrance and Mark entered to take a look. A waist deep canal passage gradually got smaller after about 8m and Mark gave up where it would have been necessary to immerse one ear in the water

to progress because the water was quite polluted with ginger colour related again to coal pollution from waste heaps adjacent to the sink.

The journey back was interspersed with a tea shop visit in Samassi for snack and drink. Then after reaching the car park for Satat this team was re-joined by some of the others who had returned from their pot bashing on the nearby ridge. Personnel were redistributed and Simon, Mark and Marcel explored and surveyed Satat Two. This was found to comprise a steeply descending series of boulderie chambers with a muddy stream passage at the bottom. The stream was followed up and downstream but became too tight after only a short distance. Some poking around in boulders on a righthand route failed to secure any onward route despite some promising drafts - although the draft was in the direction of the surface of the hillside nearby. About 60m was explored in total.

Khlieh Mukoi Lathew (Robin, Yoxz, Vijay and Adwait)

The group returned to the cave they started rigging yesterday. The rope was replaced with a new 78 metre rope by Robin. The cave went almost vertically down and opened up about halfway into a little pot. By the time Vijay reached the bottom, Robin had already looked around and there were no further openings in any direction. Robin was quite disappointed with the cave. The cave survey was completed by Yoxz on the way out and the team returned to the waiting cars well before last light to tell the tale.

**Thursday 10<sup>th</sup> November**

Maybe a New Cave/Pot (Shnongrim) (Team Robin, Peter, Vijay, Kathie and Adwait)

Accompanied for the walk in by Raplang went over to Shnongrim to investigate a 'new' pot he called Krem Mulieh that lay below the village. The cave was just off to the left going down-hill toward Manar not far from Krem Khor. A large rift pot descends about twenty meters by climbing to the head of a 30m shaft to a breakdown blockage with a further estimated 60 meter shaft to the sound of running water. On arrival they found a through-bolt had been installed on the first pitch indicating it had been explored before. Unsure of which cave this was

they used the time for some SRT rigging practice for Vijay and Adwait before returning to camp. GPS should be checked against the database; it is very likely that the first location is indeed Krem Khor (Explored and surveyed) whilst the 2<sup>nd</sup> location is a pot names as Krem Um Suba, noted in 2002 (Ish) but overlooked and never explored or surveyed. It is certainly worth a closer look.

Krem Myrho - Khliehriat (Team – Simon, Brian, Marcel, Yoxz, Mark, Richa, Shelley and Raplang)

The team took Lucy over to the Khliehriat Area and the village of Kairang, Contact was made with some locals and permission gained for the visit. Parking at a pumping station which extracts the water from the cave and sends it to the local villages. A pleasant 15min walk upstream over very slippery boulders brought the team to a beautiful waterfall with a cave beneath into which some of the water from the fall was sinking. 357m of excellent stream cave, including a large chamber with many bats, was explored, surveyed and photographed. The team then drove back to the Shnongrim Ridge Camp.



*Entrance to the Krem Myrho behind the waterfall photo Marcel Dijkstra*



*Richa in Krem Myrho streamway, photo Marcel Dijkstra*

### **Friday 11<sup>th</sup> November**

End of pre-camp. Team packed camp, loaded Lucy and the Eco and took a steady run back to Shillong, even steadier over the last few kilometres – meaning traffic jam - into central Shillong.

### **Saturday 12<sup>th</sup> November**

Main expedition team members arrive in Shillong whilst the rest of team busy themselves with sightseeing, shopping and visiting friends.

### **Sunday 13<sup>th</sup> November**

Krem Mawmluh – Cheerapunji (Team – Mark, Marcel, Yoxz, Richa, Lalam Sahkhiet and Skhembar Rajee)

The team went with the fast car of Khur to Cheerapunji where they found the guides Lalam and Skhembar waiting for them. The plan was already clear and the through-trip would go from the back entrance to the gold fish pond, then to the hanging garden and from there to the main entrance. The goal was to take pictures to support future publications. This cave has gained international fame as it is the defined stratotype location for the Meghalayan period<sup>6</sup>, the youngest part of the Holocene. This is the first internationally recognised stratotype in India and the

source of great interest and pride among Indian geologists and archaeologists. A stalagmite was taken from this cave and growth bands in it show radiometric age and delta O18 that evidence a 200 year dry period from 4200 years ago when monsoon rains failed and which likely ruined many human civilisations due to drought.

The team went up the hill with the grim décor of the abandoned cement factory in the back ground. Six years ago it stopped it's production. From that time the cave guiding started. They nowadays employ eight guides for cavers and tourist alike. The way to the entrance is quite adventurous and the team got there safe. Entering the cave first medium size passages were followed. After a short while they reach the first stop: the Gold Fish pond. Yoxz volunteers to be the model in the water, flashes are laid out for the desired lightning. After this photo shoot the team continued in a passage with a little water. Shortly after this they arrive at a second spot for a photoshoot.

Next was a visit to the hanging gardens, this is the place where the remarkable stalagmite was harvested. This place in particular has milky deposits in the pools, the surface of the rocks has iron brown colouring or very white deposits. Yoxz suggested the theory that this is cement and iron rust leaking from the abandoned factory. Also, coal seams 'leak' into the cave at certain spots. The photographers took their time to record interesting detail and after their work was done it was time to exit the cave and walk back to the village.



*Cave guide Skhembor Rajee in the hanging gardens, photo Mark Tringham*

## **Monday 14<sup>th</sup> November**

Vehicles assemble at Brian and Maureen's and are loaded for drive out to Muallian. Managed to get away quite early. Refreshment stop at 5 Star Dhaba and then onwards to Tagnub. Equipment transferred to waiting Mahindra Pickup and a very rough road saw the team arrive at Muallian. Camp set up and well organised on Muallian Football Field. New arrivals pitch tents and settle in.

## **Tuesday 15<sup>th</sup> November**

Krem (shaft) Bamboo fume pit (Team – Shirish, Yoxz, Guide Nathan Numpui) Recee

The team went in the direction of the doline and was pointed a pitch that was already shown us in 2020. There was another pitch a bit up the hill that turned out to be an unknown pitch. Sadly, the guide did not know the name of this shaft. The team would call in Bamboo fume pit. After this the team rambled a bit in Bamboo and Broom grass, found a dead end -5m pit that did not go and returned to camp.

E. RAM KHUR 1 (aka ETB1) (team – Matt Oliphant, Nancy Pistole, and Krishna) Rigged pit.

The team checked out ETB1 and ETB2 in a dry streambed. They decided to rig ETB1 because it looked easier. After several re-belays at the lip, a 100m rope barely reached the bottom (after another re-belay and three redirects). A short meander led to a nice-sized river that continued upstream. Nancy found the bottom of a pit that presumably is ETB2. The team left the pit rigged so it could be surveyed.

ETB3 (Team – Robin, Simon and Adwait)

The team walked down to the ETB 1 – 3 Area where they left Matt, Nancy and Krishna to make a start on ETB 2. Checking out the options of entering ETB 3 by a side passage meander or direct down the steep slope into the Pot/Doline it was agreed the side passage/meander provided the best option. With support from Simon and Robin Adwait rigged the first section of pitches in a fine meander passage, 4m, 6m, 2m and a final 7m to a window coming part way down and over-looking the massive ETB3 Doline/Pot. Robin rigged the next 23m pitch to land

on a large ledge. From here it could be seen the side passage option was indeed the best route as the boulder slope from the doline lip to the ledge was very steep, potentially slippery and festooned with large and unstable boulders. Robin then descended a further 25m to reach a point where another re-belay was required. Having used all the through bolts the team had, some photographs were taken before the team returned to the surface.

#### Tuichoi Pot (Team Peter, Kathi, Marcel)

The team found that the estimated half hour walk turned out to be almost an hour's walk.

Kathi rigged down with the new 200m Kordas 9mm rope to the bottom, which indeed connected to the expected point in Retdung Khur. In the middle of the room there used to be a humongous boulder. This had shifted towards the connecting passage some six meters in the last monsoon. The team then had to rig an extra rope for the 4,5m drop which the boulder had created.

Next stop was across a standing pool to a short drop which was dutifully rigged. They then returned to survey out and Kathi did a little adjustment to the rigging. The pitch which totals about 120m is now split up in 6 drops. They exited at 16.00 and took an hour to walk back up, reaching camp in the dark.



*Peter (Foreground) and Kathi (in background) rigging the start of the 120m drop Tui Choi pitch into Retdung Khur, photo Marcel Dijkstra*



*This boulder was seen 2 years ago in the middle of the room and shifted 6m in the rainy season floods, photo Marcel Dijkstra*

### Retdung Khur, Princess Laia Series

(Team – Mark, Vijay, Sai and Tanya, Cookie, Richa and Nikoi)

After some difficulties finding the best path down and the approach to the cave the whole team arrived at Entrance 8 just before noon. The initial objective was to re-find and explore a bypass to the Fairie's Bath swimming section in the downstream direction. This involved a 4m ladder pitch that had to be rigged using a long rope natural belay because of battery failure on the drill. The whole section in this part of the cave was quite wet with many static pools to cross up to waist deep in water. With a little delay the surveyed route from Feb 2020 was followed to the head of a 6m pitch down and this was rigged with another ladder and lifeline. The descent was surveyed by Cookie and team and down into a large rift with small lake below. Training was provided for Nikoi on surveying and ladder and lifeline techniques for all. Meanwhile Mark and team commenced surveying a small side-passage just up from the ladder pitch with an introduction for Tania and refresher for Sai. This passage looped out and back re-joining the main route

further up. The team surfaced after night fall and after some washing in the river returned up the hill just in time for dinner.

### **Wednesday 16<sup>th</sup> November**

#### ETB 1 (Team – Yoxz and Krishna)

The team surveyed the shaft. Upon reaching the base, there was a meandering passage that led to the river. They also surveyed approximately 140m upstream river passage. They crossed some beautiful rimstone dams and mini waterfalls.

#### ETB 1 (Team Kathi and Marcel)

They went down and started surveying the meander below the shaft. This gave out fairly soon on the main river passage. It is noisy with a small cataract, However, a few meters down the water seems to be standing and the river disappears below through a blockage where even the fish do not follow. The pool contained about 20 hungry cave fish similar to the ones in Um Ladaw<sup>7</sup>. Most of the fish had their eyes still but covered with a layer of skin, there were only a few without any visible eyes. It appears the younger ones have rudimentary eyes and when they grow older the eyes disappear under a thick layer of skin.



*Blind cave fish in E. Ram Khur, photo Marcel Dijkstra*

The passage continued in a nicely 'minaretted' fashion. Soon they passed beneath an unknown daylight shaft. Not far beyond that another daylight shaft opens, where they saw team Simon rigging down. They continued surveying. The passage spit, to meet again further down. The left side is a tricky climb down a boulder into the (reappearing) river. The right side continues large.

They stopped when time was up with 426m in the book.

#### ETB 2 (Team – Matt and Nancy)

The team spent a lot of time trying to find good rock (not rotten) at the top of the pit. Matt finally found a place for two bolts. He continued down the pit and found good places for re-belays. He cleared rocks off of spill-overs on the way down. He could see Krishna and Yoxz. He stopped one ledge above the river; he needs to clear the ledge and place two bolts, and the pit will be rigged.

#### ETB 3 (Team Simon, Robin, Lindsay and Adwait)

The team walked down to the ETB area, pausing on the way to cut a better path into ETB 2 for Matt and Nancy. They then proceeded to ETB 3 again cutting a better path down to the cave entrance. The rope was replaced on the first pitch and second pitch to allow the second rope to be moved down to the 4<sup>th</sup> and 5<sup>th</sup> pitch to reach the ledge. Lindsay, with guidance from Robin and Simon above then rigged his way down to the base of the pitch installing a further three re-belays. Whilst doing this Marcel and Kathie appeared below having surveyed in from ETB 1. Adwait stayed on the ledge whilst Robin and Simon descended the final series of pitches from the ledge to the passage below. They then took a look upstream and down-stream at the very fine passage that was being surveyed by Yoxz and Krishna (Upstream) and Marcel and Kathie (Downstream). They then exited from the cave. Couple issues on the ascent involving loose rock and a maillon that was opening at the head of the 3<sup>rd</sup> re-belay. This was sorted but the pitch will need re-rigging.

#### Retdung Khur, Princess Laia Series (Team Mark, Tanya, Sai and Shirish)

This team travelled down the hill along with Cookie's group and made good progress getting to Entrance 8 by around 10.30am. After entering the cave, survey instruments were calibrated OK and the section down from the first ladder was surveyed, followed by a maze of passage to the southwest of there. To facilitate training and experience the various

survey roles were rotated around and quite quickly Mark was able to assume an advisory role and give directions on where to go. Good ties were made around several loops to both this year and the 2020 survey data sets. Several areas resembled 'Swiss cheese' creating quite a challenge. Photo stops were made in a few places. All were well satisfied with the 274m added to the cave length and with the experience as a whole. Most of the passages were a reasonable size and with some formations in places. The team exited the cave at about 5.20pm, and were back at camp by about 7.30pm.

### **Thursday 17<sup>th</sup> November**

#### ETB2 downstream (Team Adwait, Matt, Marcel)

Matt finished his rigging of the last pitch while Adwait and Marcel surveyed the entrance series.

Marcel, Adwait, and Matt surveyed at first dry passage then found the active stream and surveyed a loop, then surveyed down the main stream. Headed out a little after 3:00pm and back at camp by about 5:15pm.

#### ETB3 downstream (team – Robin, Vijay, Nancy)

The team descended ETB3, Robin replaced one of the ropes on the way down, and added two re-belays. The team caught up with Marcel, Adwait, and Matt at a T-junction. They sorted out the survey numbers, then split up. Marcel's team went left, Robin's team went right. They surveyed through a large room and came to an intersection. The team surveyed to the left, and eventually looped around and connected back to the intersection. The team encountered several leads going off of the loop that were not surveyed. The team ascended ETB3 as it was getting dark, and returned to camp at 7 pm.

#### ETB2 upstream (team Yoxz, Krishna, Lindsey)

The team walked with other teams to ETB 1. The team went down and did an extra measurement to improve the survey of the pit. At the water the team went quickly to the last station at the rimstone dam. The beautiful passage went on and the team mapped on. The problem is that the water is deeper than the team would like, swimming is necessary. The team left some question marks, but to escape the constant river noise they tied them all off. One of the side passages ended under a daylight shaft.



*One of the more than 60 rimstone dams upstream E. Ram Khur, photo Marcel Dijkstra*

The team returned and exited the cave by using the brandnew rig by Matt, which they really liked.

### Retdung Khur, Princess Laia Series (Team Mark, Tanya, Sai and Shirish)

This team again visited princess Laia Series. Firstly, they travelled from Entrance 8 to Oberon Hall for photos and were well impressed with the range, size and diversity of the formations as well as the large passage size. Mark remembered that some smaller righthand passages along Oberon Way remained to be explored and surveyed and these were done, amounting to about 60m length. One of these had some pretty gours and other calcite formations while the other was quite muddy and horrid. The team then made their way down to the lower parts and resumed surveying where they had left off the previous day and added significantly to the tally of 'Swiss cheese' maze passages. Like the previous day the team rotated the surveying tasks around for experience and training in cave surveying. They exited the cave at about 4.30pm just as the evening light was fading and faced the hard trudge about 1.20 hrs back up the hill afterwards.

### Retdung Khur Princess Laia Series (Team Cookie, Nikoi and Simon)

Steady walk downhill saw the team at the entrance in good time. Set off to ends of previous surveys where some modest but beautifully formed passages were found along with another two entrances (Retdung khur 12 and 13), stopped surveying at around 4-30pm with 260m in the bag. The team then decided it would be better to make their way back from the new entrance 12 rather than go back through the cave. 1.5 hrs later and much walking up and down the river it was realised it was better to go back through the cave rather than be lost in the forest. This they did, Cookie not feeling too well so a steady walk was taken up the hill to arrive at the camp at 9pm.

### **Friday 18<sup>th</sup> November**

### Recce to Area South West of Muallian (Peter Ludwig, Adora Thabah, Brian K. Daly, Guides Lunthulung Darnei and Samuel Ngamlai (Muallian))

A two and a half hour trek south west of Muallian brought them to Enthuk Khur. Half an hour later they were at the shaft of Khurinphir Khur. On the way back they located Khurpair Khur, Khurling and Thinkbul Khur. All these caves are vertical. Left Muallian Camp at 9 AM and returned back at 4 PM

### Ram Khur ETB 1 upstream (Team Lindsay, Nancy, Yoxz)

They entered the system by the new route down the ETB2 pit. All wearing wet suits, it was a good start for a good day. First the team looked at two loose ends they had skipped yesterday. Their next goal was up the river to the last survey station. Stream passage divided the sections between rimstone dams. Climbing 2m high dams against the water overflowing the edge was quite challenging. In between, the river passage was never easy and serious swimming needed. Not all was river passage. The side passage they found was long, small and winding. There were some alcoves that needed inspection, splay shots, sketching or a proper survey.

### ETB 2 Downstream 1 (Team Marcel, Kathi, Matt)

The team had a quick start down ETB 2 entrance and left their SRT gear at the bottom of ETB 3 as underground it is a five minute walk through pleasant walking size passage and above ground it is a rough 10 minute walk.

At 10.00 they started where they had left yesterday. First, they followed the stream down. The passage was narrow with fast flowing water, alternating to low and wide passage. Very disappointingly it ended in a sump after nearly 300m.



• *Image Caption P27 (Change to) - Kathi working her way upstream in Ram Khur against the current, photo Marcel Dijkstra*

They then went back and started to survey the upstream flow. The stream had many blind white fish.

After climbing, with some antics, a steep gour with a fast flowing stream pouring over the rim, they found a short side passage with an aven and a waterfall coming down it. Back at the main passage the stream sumped again. Altogether not a bad day with 558 m in the book.

### ETB 1 Downstream 2 (Robin and Adwait)

Entered the cave by ETB 3 Shaft, re-rigging on lower section to avoid bad rock and went to end of previous days survey. Surveyed along some impressive dry oxbow passage and exited via ETB 3.

### ETB 3 SRT Training (Shirish, Nikoi, Tanya, Sai and Krishna)

The team reached shaft 3 at approximately 10 AM. The team decided to only explore the first 2 pitches of the shaft. Initially Krishna explained the basic uses of the caving SRT equipment. The team then learnt how to descend and ascend. After a couple of practice runs, the team learnt how to cross a re-belay. Around 3 PM the team decided to head back to the campsite.

### Retdung Khur, Princess Liai Series – Not so dry maze (Team Simon and Cookie)

Steady walk down to Retdung Khur. Reached leads in Princess Liai Series and explored several passages with some reaching two new entrances (one consisting of multiple entrances between huge blocks. At one point reached what appeared to be a previously explored area and as no survey marks could be found the survey was terminated there to avoid risk of re-surveying a previously surveyed passage. 183m surveyed. On reaching the last of the new entrances the team elected to return through the cave instead of trying to find a way back overland/along the river, thereby ensuring they were back in camp before midnight!!!

## **Saturday 19<sup>th</sup> November**

### ETB1 – Upstream (Team – Marcel, Nancy and Matt)

The team cut a long bamboo pole, descended ETB2, and made their way upstream. At the end of the previous day's survey, there was a narrow canyon side lead at the base of a rimstone dam. This was surveyed, but ended at a climb. Matt got up a little way, but could see more climbs, so the team turned around and went back to the river. The rimstone dam was about 3 m tall, and difficult to climb (where the previous survey team turned around). Matt was able to climb up on the left side and rig a rope. He tied a series of knots in the rope so Marcel and Nancy could use it as a handline. This was the climb where the team thought they might need the bamboo pole. The team continued upstream, and were able to freeclimb the rimstone dams they

encountered. At one point most of the water channelled through a pile of big boulders. The climb looked intimidating, but there were plenty of hand and footholds. The team left the bamboo pole, the cable ladder, and several slings at this spot. At the top of the climb there is a 40 m swim, the longest swimming stretch encountered so far. After the swim the river passage seemed to level out a bit, and the rimstone dams were smaller, less than one meter tall.

Some small blind cave crabs were spotted by Nancy who was ferreting. They collected one specimen which was taken out and later given to Shirish for further scientific studies.



*Eyeless cave crab sitting on the wall, not the fossils in the rock, photo Marcel Dijkstra*

The team primarily followed the river upstream, but there were several side passages that looped back to the river that were surveyed. At 4 pm the team was getting chilled (even while wearing neoprene), and turned

around in very nice passage. They got back to camp in time for dinner with 649m in the book.

### ETB 3 SRT Training (Team Krishna, Vijay, Nikoi and Tanya)

The team walked to ETB 3 and with support from Krishna and Vijay, Tanya and Nikoi refined their SRT skill on the Window Pitch down to the ledge and back.

### Pynoh Um Sngad (Team – Cookie, Kathie, Simon and Brian)

The team were driven up to Tlang Moi in 'Lucy' by Men and Sid, who then continued onwards to Khliehriat to buy vegetables and ice. From the dropping off point they then walked down the track and along the path through the broom, ably guided by Cookie and his GPS to reach the pot. Kathie and Cookie then rigged the entrance pitch, leaving the tackle for the remaining smaller pitches at the base of the entrance pot. Meanwhile Simon and Brian cleared an access path through the undergrowth from the broom drying frame to the pot. The team then returned to Tlang Moi (about a 1 hr walk) where they were collected by Men and Sid having returned from shopping in Khliehriat.

## **Sunday 20<sup>th</sup> November**

### ETB 1 Upstream ( Team Mark, VJ, Yoxz)

The team was very unlucky on this trip. On the descent at the second re-belay a fist-sized rock hit Mark on his hand, dislodged from the surface 20m or so above, but never the less he continued the trip after cooling off the injury in the streamway. Outfitted with wetsuits and life jackets the team worked their way up through the river. It was not an easy trip: the team was more or less constantly in the water trying to manoeuvre around the rock slabs under water. Numerous 2 to 3m high rimstone dams were climbed but doing that the team found itself wrestling with challenging cascades and swims. The first 11 rimstone dams to climbed, the eleventh being the biggest monster of them all. The day before the team of Marcel, Nancy and Matt had left a rope to climb this monster and with some strength and the help of the rope the team was able to conquer this beast of a dam.

Above this dam VJ expressed that an old arm injury had played up and he was sorry to tell that it might be better to return. Mark also assessed the condition of his swollen and painful right hand and together the team weighed the possibilities and agreed to turn back at this point several

100 metres short of the intended start point for upstream exploration and surveying. They took a few photos on the way out and with some delay and awkwardness all 3 ascended the 100m entrance pitch OK. They were rewarded with a glorious sunset towards Lumshnong.



One of the many rimstone dams in Ram Kur upstream river passage, photo Marcel Dijkstra

### Krem Pynnoh um Snagd (Cookie, Kathie and Simon)

Hours walk from camp to cave. The team then descended the fine entrance pitches, with Kathie rigging a new rope on the last drop to remove the need for a knot near the base of the pitch. The team then set off into the cave rigging several short drops/very awkward climbs on the way in: 5m, 4m, 4m, 3m and then the 16m pitch followed by another drop of 4m. Here they removed the SRT kit and set off through the very long and very cobbly crawls eventually arriving that the Canyon and a little after this the impressive mainstream passage. Here the life jackets were left and the team continued down to the furthest downstream point where a cairn was built under the point to act of a good marker for any Ram Khur - ETB teams that might find themselves exploring up the streamway. It was not late so the party exited from the cave, found Lucy and drove back to camp arriving at around 9-30pm. Simon commented that he had seldom known a more awkward to traverse cave in Meghalaya only compensated for by a fine series of entrance pitches and a magnificent downstream passage.

### **Monday 21<sup>st</sup> November**

#### Ram Khur ETB 3 (Marcel, Nikoi and Krishna)

The team reached the shaft at around 9:30 AM. They explored and surveyed ten question marks noted on the PDA. Some of the passage was muddy and slippery. They also took time out to shoot some photographs. Marcel introduced the others to the Cave Fungus Gnat (*Speolepta leptogaster*) which is abundant in this area.



*Krishna looking at the Cave Fungus Gnat in larval stadium, photo Marcel Dijkstra*

### Tui Choi Pot (Team Cookie, Kathi)

The team got to the entrance and surveyed the shaft again because Marcel's data got lost from the first day. They connected the survey point with Robin's from 2020. Then they went to the river and moved upstream to some cascades swimming along the way. Cookie climbed up the first cascade to assess the way on.

### **Tuesday, 22 November 2022**

### Retdung Khur (Tanya, Vijay and Sirish)

The team reached the Entrance eight of the Cave by 10.15 am post which they started to head to the survey point 412 series, with around 4 question marks, they Managed to Reach the Oberon Series and about 20m further from the last station.

The Team decided to go revise their survey skills in the Oberon Series and Managed to see the entire passage which was muddy and slippery. They went out through entrance eight and returned to the camp Around 5:15 pm.

## Ram Khur ETB2- upstream (Matt, Nancy, Marcel)

The team left at 06.00 intending for a long push upstream hoping to connect with Pynnod Um Sngad. They made good progress and started with a side passage near the previous end. This took a while and they found two monkey skeletons. The bones were crumbling, but one skull was more or less intact.

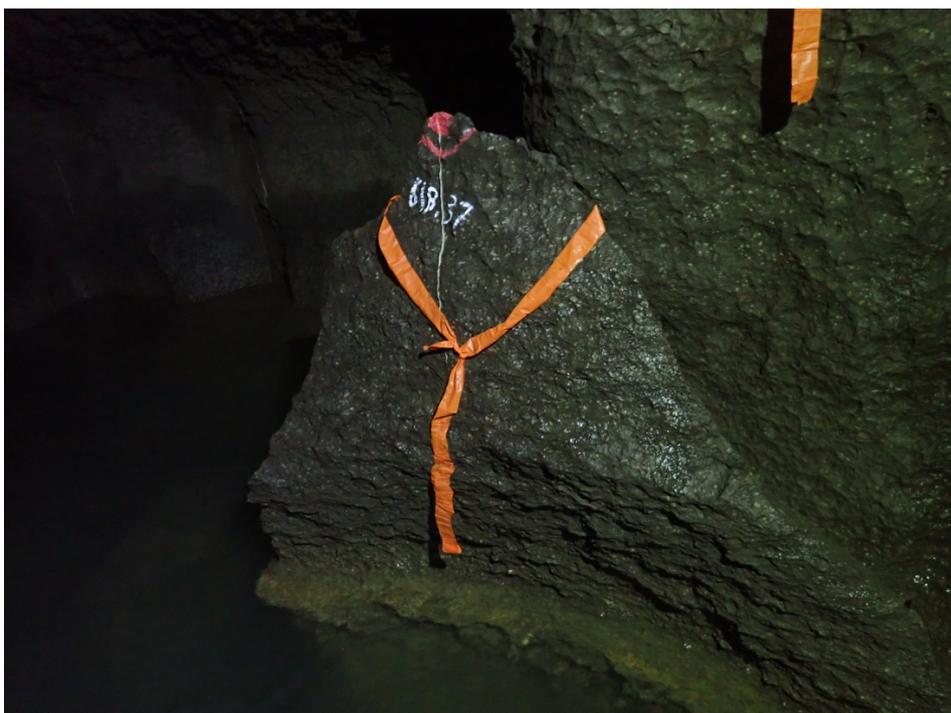


*Monkey skull found in the side passage, photo Marcel Dijkstra*

They then pushed upstream surveying slowly against the relentless currents. At one point the rivers started to divert into a maze of passages. Some standing rocks looked like a whale tale so the passage was called Whale Tale Avenue. They left a large dry (some 8 m wide) passage to the left wide open as the main goal was Pynnod Um Sngad. However, at 16.00 they called it a day. They left some orange flagging tape at the last station so that Simon and Cookie, Kathie and Nikoi wouldn't miss it if they got there. They arrived back at camp at 20.00.

## Pynnod Um Sngad (Team – Simon, Cookie, Kathie and Nikoi)

Team were taken to Tlang Moi where they then walked down to Pynnod Um Sngad. Bivouac site very near the cave was cleared by Simon and Cookie whilst Kathie and Nikoi walked back to the little stream to get water. Descending the cave progress to the downstream lead was temporarily interrupted by a close encounter with a Bamboo Pit Viper occupying a strategic position on top of a rock in the centre of the passage. Thanks to intervention from Nikoi the snake's attention was diverted from the team to allow them to pass and finally it was ushered into a crack beneath the rock. The team then continued to the downstream lead to find that it had not been reached by the team working upstream in ETB. Continuing downstream a 100m of fine stream passage entered a huge hall (35-40m x 40m) apparently aligned along a major fault. Traversing beyond this the river passage continued in fine style getting more aquatic as the team headed downstream. A swim followed by a short pool met the final upstream survey point from the ETB team. Pynnod Um Sngad had been connected to ETB. The team then returned to the entrance, pausing in the Bamboo Pit Viper Area to check it was not back on its rock, it wasn't, allowing the team to arrive at the bivouac at just before midnight. They then feasted on crackers and cheese and sardines before settling down to sleep. 431m surveyed.



*The connection station between the two caves, photo David Cooke*

## Thursday 24<sup>th</sup> November

ETB 1 Downstream, via ETB 3 shaft (Team - Robin, Shirish and Mark)  
Robin had in mind to explore and survey several side passages seen before but not entered. These were on the left hand side going off from the main large route about half way down to the present known end (Stn. 386.13). Having tied in they surveyed several loops here, one loop going back upstream and a branch off it returning more or less to the starting point. A total of 344m of passage was surveyed mostly small to moderate sized and with gravel or sandy floors at the same height as the main passage. The last part done went up about 7m to a higher level and had much boulder breakdown and very sticky mud. The loop ties were all good (>0.8m). This part of the cave seemed to be complete, so the party headed out. The entrance shaft of Entrance 3 proved an epic learning experience for Shirish, who spent about 20 minutes at the first re-belay before sorting out a chest jammer problem, getting the hang of it and ascending without major issue after that. This caused concern for those above, while Mark was coming up last and gave Shirish encouragement and advice as best he could from the bottom.

Adwait, Nikio, Tanya, Kathie, Krishna, Vijay, Sai left today to Shillong. They packed their equipment and tents, said their goodbyes and loaded their equipment into Lucy (Who despite the weight was looking pretty fine and capable). The atmosphere in camp felt a little different that evening.

## Friday 25<sup>th</sup> November

Recce Muallian Area (Team Brian and Kyrmen)

Half an hour's walk from camp into a gully brought Kyrmen and Brian to a crack in the rock measuring 1.8m by 0.80m with a drop of possibly 10m. The passage appears to continue horizontally but getting narrower. There was a visible strong draught. Hard to assess whether the cave (**Rijab Dung Khur**) has potential or not.

Guides: Lala Darnei, Moi Darnei and Peter Darnei

Team back at camp by 10.45 AM

### Kellung Mual (Peter, Nancy & Yoxz)

The team was on a mission to see if the cave would connect with Retdung Khur. Whether the cave connected or ended, they would derig the cave and take the ropes home. Starting from the village, the route went down hill through broom grass plantations. They passed the old washing place and with Peter as the guide they followed a well-used track, but the last 180 m was bushwhacking to reach the ravine. Peter then found the pit in the ravine after a bit of searching.

Down the rope and through the cave with small passages and muddy crawls, it was just like being back in good old England. The team reached the place where Wetti stopped in 2020 and found some survey stations. Peter did his magic with rope and a chockstone in the ceiling to enable the team to go down the first hurdle. Further down the canyon passage he beautifully rigged a little drop with a natural tie-off and a sling around a blade-shaped flake.

The team followed a tight meander and reached a now-dry in-feeder with a nice flowstone formation. Both the in-feeder and the main meander were too narrow to follow any further. The team turned around and exited the cave. Peter derigged the pitches and the team divided the gear between three packs. As the team got ready to hike back, Peter's back locked up and he was in great pain. Luckily, Nancy had some medicine that worked after some 15 minutes. The team redistributed the packs and then made their way back to Muallian. They arrived back in camp at 4:40, just before it got dark. They surveyed 75 m and added 19 m to it's depth.

### ETB 3 Downstream (Robin, Marcel, Richa)

A 'happy team' excitedly walked its way down to the cave chit chatting and laughing. They were finally going to have some fun! On the way to the cave Marcel picked up a sturdy bamboo to put across the pool in the bottom of the second drop with stinky standing water. Down below there were life jackets waiting for them (The team from yesterday had left them). Starting from our previous terminus, Robbin put in the ladder up to the balcony and lowered another down to the lake below. In we went into the water in our wet suits – the water felt surprisingly warm. The low arch continuation soon grew bigger changing into nice clean washed canyon passage. Surveying down steam a site passage emerged - which was the way on because the main streamed sumped after 60 m. This 'syndrome' occurred a couple of times and after a stretch of low passage (head space), near ducks – we emerged again into a nice

passage. Marcel started to feel hungry and we had our lunch of biscuits and coke. The team met with another sump soon after the downstream was finished. However, there is a fairly positive lead some way back upstream at a mud bank climb which leads to ongoing large trunk passage. Team changed and Richa happily dumped off her wet suit for Robin to carry up the ropes and he got a tight hug on reaching the surface. 😊

### Pynnod Um Sngad (Team Cookie, Simon and Matt)

Steady walk down to the cave, change and then descent of the pitches and small climbs afterwards. On reaching the river passage the team took the first exit, a side passage, on the left hand side of the river passage. This quickly leads to the huge relic passage that seems to run above and aligned with the river passage. Continuing in a roughly NNE direction the huge passage continued, turned to the left (NNW) for a short while before continuing NNE in an ever increasing size (Up to 40m wide by 30m high), passing through chambers and up and down large and somewhat unstable boulder slopes. After some 400m a steep boulder descent reach a river passage with the water running left to right and not right to left as expected. This was followed downstream to a boulder collapse and upstream to a huge hall/passage. Here exploration was halted both due to time and the need to ascend a steep mud-bank. Up which Matt had managed to engineer a route. Exploration was halted with 736m surveyed and a steady return was made to the surface with Pynnod Um Sngad again demonstrating it was indeed one of Meghalaya's most awkward caves. The team walked back to Tlang Moi arriving (despite being very late) just in time to be collected by Lucy and taken back to camp.

### **Saturday 26<sup>th</sup> November**

#### Lui Khur (Richa, Peter, Nancy, Marcel, Yoxz, guide Biatmoi)

This cave was located on the 21<sup>st</sup> by Brian as well as 3 other shafts nearby. The team consisted of all slightly injured team members who can't go down (long) water caves due to their injuries. Nancy started rigging and after 4 re-belays she was at the bottom. Marcel and Yoxz followed surveying down, however the DistoX had a mind of its own doing only short legs. Nancy found the pit was blind, no open passage or draught anywhere. Marcel came down second and found to his surprise

a survey point in nail varnish in our own style. Bugger all, this cave has been located and surveyed obviously, but we had no record of it. Marcel free climbed up some crack, but to no avail. He found a bat in the crack. Richa started to come down, but there was bad rock fall potential at the top so she went back up as to not knock any more rocks down.

Just before they climbed out a snake appeared, so they had some bonus fun after all. The snake was duly recorded with the phones before departure. They later found out it was surveyed on Feb 16, 2020 and called Thloile Shaft and Thloile Khuar in the logbook. So much for miscommunication.



*Nancy looking up at Yoxz climbing out photo Marcel Dijkstra*

Retdung Khur – Upstream side passage leads (Mark, Cookie, Shirish and Simon)

Pleasant walk down into the valley, changed and entered the system via E8. Using markers to easy route finding on the return the team made its way through the princess Liai Series and on to the main stream passage. This stunning Meghalaya style river passage was then followed upstream for 1.5k to a point north of the Ruined Castle Series where an unpushed side passage yielded 808m of pleasant passage and a section of streamway. With the new stream passage terminating to it lower end in a sump and upstream in a boulder choke 808m was surveyed. The team then made a delightful exit down-stream and over/through the ‘Cascades’ to reach entrance E8 again. Changed and a steady slog back up the hill to the camp.

Camp - With Ronnie, Trevor and Bill (The Hog Roast Connoisseur) having arrived at camp the previous evening having been joined by Lindsay, Toki and others the pig was dually roasted and the teams and friends feasted on roast pork.



*Pig roast at camp, photo Marcel Dijkstra*

## **Monday 28<sup>th</sup> November**

### Retdung Khur (deleting question marks in the Princess Laia section) (Yoxz and Nancy)

The team left camp just after 8 am, and followed directions by Mark down to the river without any problem. However, it did take a little scouting to find Entrance 8 on the hillside. The team consulted the cave map on the PDA, rigged the drop, and found the way to the passage with numerous question marks. First order of business was to calibrate Nancy's DistoX2; the process went smoothly. The team proceeded to systematically check off the leads. The leads on the PDA were in the 650 series, but the stations in the cave were labelled with 550. There was a lead off of 650.13 that went to a lower level. It looked like it drains water when the cave floods; there were still pools of water in the floor. One of the pools had bright orange 'slime'. The passage continued for at least 30 meters but was left as a question mark. Many of the other question marks connected to each other (the area is quite mazy). Two of the leads choked down to belly crawls, but then broke out in avens. The team did not have any problems finding the way out of the cave (and Yoxz managed to exit with both his gloves even though he kept forgetting them in various places in the cave). The team returned to camp at 7 pm, with 123 m surveyed.

### Retdung Khur (upstream via Tui Choi Shaft) (Team – Mark, Matt and Cookie).

The team spent some extra time to locate the best path down to the entrance, but otherwise got off to a good start. The objective was to push upstream beyond the limit reached in 2020. Mark found the SRT 114m entrance pitch generally OK but as predicted the re-belay across and under a nose of rock proved acrobatic and challenging especially as his hand was still stiff and swollen from the rockfall last week. From Tui Choi the main streamway was entertaining and sporting with the cataracts and many other cascades and pools to negotiate, worthy of a water theme park! The start point was located OK and exploration and surveying proceeded well with initially a nice sized river passage trending SW with large bat colony above. An oxbow section was included in the work and by 2pm a large junction was reached with three dry passages up on the right hand side that will await a later visit to explore. After a break, the team continued again upstream and after a few hundred metres more the passage character changed with the

stream flow appearing and disappearing from sumped pools and the overhead passage very boulder strewn. These got smaller and muddy for a while but then broke into a long straight-walled section formed along regular parallel fracture sets. After another smaller section the ceiling broke out into a vast chamber overhead that turned out to be approximately 40m wide and 200m long, rising up steeply both ahead and back with massive quarry-like boulders everywhere. Matt bravely tackled the steepest boulder slope that soared up SW at about 35 deg into the distance while Cookie took the opposite direction. However, in both directions boulders finally met the ceiling without any likely continuation towards the desired connection to ETB3. At 6.30pm the team turned around and enjoyed a fun down-stream float over many rapids and plunge pools before arriving back at the Tui Choi inlet at 'Straight arrow Rift'. An uneventful ascent was made of the entrance shaft arriving back at camp at 10pm.

#### ETB Downstream (Via ETB 3) (Team - Richa, Shirish and Simon)

The team descended ETB3 and made their way down to the remaining lead in the downstream section of the cave. The survey point was located and they progressed along a fine passage some 8m x 8m that showed clear evidence of taking a lot of water during floods. This developed into a large hall floored with clean washed boulders and the started to head downhill. At this point the team were hopeful that it would continue in fine style to intersect the Retdung Khur River Passage. This was not to be as after some 600m a chamber was reached with a small inlet stream entering from the left. The chamber closed in a major collapse with no air movement. The small streamway was investigated and proved to terminate in a large and low downstream sump whilst upstream it became very low after some 40m. No connection to Retdung Khur but some 758m surveyed. Steady exit from cave with Simon and Shirish de-rigging the pitches as they ascended. Marcel had kindly come down to the ETB3 entrance to assist in carrying the ropes and tackle back. Arrived back in camp at around 9pm.

#### **Wednesday 30 November**

#### Retdung Khur (via Tui Choi) (Team Mark, Cookie, Marcel)

The goal of the day was to check out if the lead on the Northern Line was worth pursuing and then go on to continue the survey of a few days back elsewhere in the upstream area. The first goal was easily scored.

The passage was scouted and found to continue nicely on from where the passage was explored in 2020. Soon after passing the previous exploration limit the team came to a large chamber and a stream entered this from the other end in the form of a nicely domed canal with big blind white fish. Here they turned back after proving that this is an attractive target for future expeditions. It was noted that there was a lot of flood debris in the chamber like large tree trunks and also there were plenty of spiders, pointing to the possibility of another new entrance nearby.

They then went upstream and started surveying the branch starting at 'Blackpool Sands'. A left-hand branch terminated at a boulder choke after about 250m. After nearly 400m of surveying they spotted an enormous chamber rising up into darkness, it was hard to guess the dimensions, but one disto shot in the wild gave 70m. Unfortunately, time was up after about three hours exploration and surveying, as they also had to de-rig the entrance pitches and get ready for departure next morning. The trip made a satisfying finale to the expedition.



*Mark in the connecting passage between Tui Choi and Retdung Khur, photo Marcel Dijkstra*



*David 'Cookie' Cooke in the bat passage in upstream Rettung Khur, photo Marcel Dijkstra*

## Summary

The expedition comprised of two distinct phases with a one week pre-expedition in the Jalaphet Area in the Central Jaintia Hills, followed by a two and a half week main expedition in the Muallian/Thlang Moi area in the East Jaintia Hills. The achievements were as follows:

- In the Jalaphet Area 6 caves were explored with 5 of these being previously unexplored caves, completing exploration of known caves in this area. On the Jalaphet Ridge 3 pots included **Khieh Um Soh Jew** with 272m of passage were explored. In the surrounding area **Khieh Ur Snaing** was explored for 223m and **Krem Poh Bang** for 103m. Whilst the beautiful, **Krem Myrno** located near to Khliehriat and with an entrance hidden behind a stunning waterfall yielded 357m of stream passage, a large chamber and bat colony.
- In the Muallian Area the main focus of activity was on the large **Retdung Khur** and **Pynnod Um Sngad Systems** both partially explored in 2020 and ongoing.
- **Retdung Khur** was extended at its downstream end with more labyrinth passage being explored in the Princess Laia Series that connected to **Lia Dung Maul** cave. This and further exploration in the two major upstream passages, accessed via the impressive 120m **Tui Choi** entrance pitch, included the finding of what is currently the largest known chamber (200m x 50m x 40m) to be found in Meghalaya extended the cave from 11,558m to 16,328m in length raising it from India's 7th longest cave to the 6th longest.
- **Krem Pynnod Um Sngad** was extended from 4,131m to 5,295m and more significantly linked to **Ephesia Ram Khur**, a new cave with 3 impressive 100m+ pitches as entrances. This created a system (**Pynnod Um Sngad – Ram Khur**) of 12,433m in length and India's 8th longest cave. With a vertical range of -265m, this system now ranks as the Indian sub-continent's 2nd deepest system. Regrettably Retdung Khur and Pynnod Um Sngad – Ram Khur could not be linked despite being very close to one another at their respective upstream and downstream ends. The focus of future exploration in the area will be to link these to create yet another 25Km+ system in Meghalaya.
- **Kellung Maul**, partially explored in 2020, was extended from 209m to 284m in length with the addition of some small pitches in the lower level of the cave.
- Ongoing reconnaissance in the area identified many new shafts in locations where there is currently little known cave. These will be investigated by future expeditions.
- What is likely to be new species of blind cave crab was found and a specimen is with Indian Biologists for further identification.

Over the course of the 2022 expedition a further 13.4km of new cave passage was explored and mapped taking the total of the mapped passage in Meghalaya to over 531km since systematic cave exploration began back in 1992.

## Indian Subcontinent Longest and Deepest Caves – Dec 2022.

### Longest Cave

	Cave Name	Country/State/Region	Length
1	LIAT PRAH CAVE SYSTEM	India, Meghalaya, Jaintia Hills	31,070m
2	Krem PURI	India, Meghalaya, Khasi Hills	25,317m
3	Krem TYNGHENG-DIENGJEM	India, Meghalaya, Jaintia Hills	21,775m
4	Krem KOTSATI-UMLAWAN	India, Meghalaya, Jaintia Hills	21,530m
5	PIELKHLIENG Pouk-Krem SAKWA	India, Meghalaya, Jaintia Hills	20,522m

### Longest Cave in Limestone

	Cave Name	Country/State/Region	Length
1	LIAT PRAH CAVE SYSTEM	India, Meghalaya, Jaintia Hills	31,070m
2	Krem TYNGHENG-DIENGJEM	India, Meghalaya, Jaintia Hills	21,775m
3	Krem KOTSATI-UMLAWAN	India, Meghalaya, Jaintia Hills	21,530m
4	PIELKHLIENG Pouk-Krem SAKWA	India, Meghalaya, Jaintia Hills	20,522m
5	UMTHLOO CAVE SYSTEM	India, Meghalaya, Jaintia Hills	18,234m
6	RETDUNG Khur (Krem Rynjang)	India, Meghalaya, Jaintia Hills	16,328m
7	Synrang PAMIANG	India, Meghalaya, Jaintia Hills	14,157m
8	Krem PYNNOH UM SNGAD – EPHESIA RAM KHUR (ETB)	India, Meghalaya, Jaintia Hills	12,433m
9	Krem SHRIEH	India, Meghalaya, Jaintia Hills	9,769m
10	Krem LABIT KSEH	India, Meghalaya, Jaintia Hills	7,499m

### Deepest Cave in Limestone

	Cave Name	Country/State	Vertical Range/Depth
1	Synrang PAMIANG	India, Meghalaya	317m (+4m/-313m)
2	Krem PYNNOH UM SNGAD	India, Meghalaya	265m (-265m)
3	UMTHLOO CAVE SYSTEM	India, Meghalaya	255m (+159m/-96m)
4	PIELKHLIENG Pouk – Krem SAKWA	India, Meghalaya	233m (+52m/-181m)
5	Krem SYNRRANG NGAP	India, Meghalaya	223m (+4m/-219m)
6	Krem KOTSATI-UMLAWAN	India, Meghalaya	215m (+6m/-209m)
7	Krem UMJASEW	India, Meghalaya	197m (-197m)
8	ZONG Khur	India, Meghalaya	191m (-191m)
9	Krem SHRIEH (Tangnub)	India, Meghalaya	187m (-187m)
10	RETDUNG Khur (Krem Rynjang)	India, Meghalaya	180m (-180m)

### Longest Cave in Sandstone

	Cave Name	Country/State/Region	Length
1	Krem PURI	India, Meghalaya, Khasi Hills	25,317m
2	Krem LUM SHKEN	India, Meghalaya, Khasi Hills	3,295m
3	Krem MAWTYNHIANG	India, Meghalaya, Khasi Hills	3,140m
4	Krem DAM	India, Meghalaya, Khasi Hills	2,848m
5	Krem MAWPUN	India, Meghalaya, Khasi Hills	2,376m

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<sup>1</sup> Anyone interested in future expeditions get in touch with Simon Brooks (Simonj.brooks@btopenworld.com)

With 10 of the 21 being cavers from India the expedition boasts an indigenous caver percentage of 47% and with 8 of the 21 being female cavers that's 38%.

<sup>2</sup> The expedition diary records all events and whereabouts of the expedition and its participants. For readability of this report it has been modified and repetitive detail has been left out. Records of reconnaissance missions or 'recee's have been largely left out. These are usually long uneventful slogs up and down hills, but also nice walks in stunning landscapes. So, the vital role of Brian K. Daly who does most of these recee's is not reflected in the excerpt.

<sup>3</sup> The traditional way from Gauhati to Shillong is by taxi. With the new, 4-lane in places, carriageway the journey is now quite swift with Shillong itself being the bottleneck. To reach the outskirts of Shillong will take 2 to 2.5hrs – to reach your hotel in the centre adds another hour. A Taxi will cost about INR 2,500/3,000.- (for a complete taxi). Expedition members can share taxis (and costs) with other expedition members arriving at more or less the same time. If possible, book early flights so you don't have to leave Gauhati later than midday as beyond this time finding Taxi's that are willing to go to Shillong can be more difficult. Look out for taxis with Meghalaya plates indicated by the letters ML on the number plate as these tend to be cheaper than the Assam taxis as the Assam drivers tend to charge you more because they have to drive back to Gauhati. An alternative to a taxi is the Sumo taxi's. These tightly packed vehicle usually depart from Gauhati Bus Stand or the Railway Station (you will need a taxi or bus from the airport to get to either) at all hours and will cost INR 300/350.

<sup>4</sup> 1. The expedition fee for 2022 is INR 1900.- per day for Non Indian/International Expedition Member to be paid in Rupees, cash, on the day of arrival (current equivalent – Sept 2022 - £20.50 / €24). Indian Expedition members will pay a lower rate of INR 1,500 per day. The total for International Expedition Members (regardless on which day you arrive or depart) will be:

4 weeks = 25 days to pay = 47,500 INR

3 weeks = 19 days to pay = 36,100 INR

2 weeks = 13 days to pay = 24,700 INR

(For Indians it will be: 37,500 INR, 28,500 INR & 19,500 INR.

This money is paid cash (in Indian Rupees) to Simon Brooks when you arrive in Shillong and is use to cover the costs for everything from food to transport and guides whilst we are in the field (expedition area). Outside of this the only other expenses expedition members will have will be at the very start and the very end of the expedition and will include airport shuttle, hotel accommodation and food (and of course any personal shopping). Changing of foreign currency – Often best done in your port (Airport) of arrival where various official money changing booth will give you a fair deal. ATM's often don't give you more than 10'000 Rupees per draw, but it is advisable to try to get as many rupees as possible from the airport ATM's and if you don't get enough the rest can be taken out the ATM's in Shillong. ATM's take a small commission for the transaction.

Please note that the old 500 Rs and 1000Rs Banknotes (in Circulation before 2016) are no longer legal tender and therefore not accepted. These notes were replaced in Nov 2016 by new 500Rs and 2000Rs Banknotes. When changing your foreign currency try to get

a mix of 2,000Rs and 500Rs notes if possible - the 2000Rs bills are almost impossible to use for daily purchases, tea at tea shops, small fees and guide fees, but useful for paying your expedition fees!.

2. Equipment Fee - as with the previous years (2004 to 2022) the equipment fee will be £25 per person (Preferably paid in Pounds into the expedition equipment account (see below) via Simon Brooks). Each year the expedition needs this money to cover up-front equipment expenses and consumables (Replacing drills, ropes, bolts, medicines, etc) as well as maintenance costs associated with the generators etc. UK cavers need to pay by cheque, cash or more commonly Bank Transfer in Sterling to Simon Brooks prior to the expedition taking place. European and other nationality cavers can either transfer the money to the expedition equipment fee account.

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<sup>5</sup> Krem means cave in the Khasi language, but we are in the East Jaintia hills here, where the language is Jaintia. The word for cave is Khur here but it is Biate language, a Mizo dialect. However, as most of our guides know a bit of Khasi and when we speak of caves we use 'krem' so our guides have started using 'krem' as well.

<sup>6</sup> <https://themeghalayan.com/sohras-mawmluh-cave-to-be-one-of-the-first-100-iugs-sites/> and [https://www.researchgate.net/publication/351460999\\_Cave\\_%27Krem\\_Mawmluh%27\\_of\\_Meghalaya\\_plateau-The\\_base\\_of\\_the\\_%27Meghalayan\\_Age%27\\_and\\_%2742\\_ka\\_BP\\_Event%27\\_in\\_Holocene\\_Anthropocene](https://www.researchgate.net/publication/351460999_Cave_%27Krem_Mawmluh%27_of_Meghalaya_plateau-The_base_of_the_%27Meghalayan_Age%27_and_%2742_ka_BP_Event%27_in_Holocene_Anthropocene)

<sup>7</sup> In 2019 a new species of blind cave fish (Golden Mahseer, *Tor putitora*) was discovered by our expedition in Um Ladaw, a cave in the same area. It was also the largest blind cave fish ever found and therefor attracted a worldwide attention. We even made it to National Geographic Magazine. <https://www.nationalgeographic.com/animals/article/worlds-largest-cave-fish-found-in-india>.

Scientifically the story of the fish is published in; *Harries, Dan et al. Cave and Karst Science*, Vol.46, No.3, (2019), 121–126 © British Cave Research Association 2019. *Transactions of the British Cave Research Association*.

Compilation Marcel Dijkstra