

BENARAT 2024



An Anglo-Malaysian Expedition to the Gunung Mulu National Park, Sarawak

REPORT
on the findings of the
BENARAT 2024
EXPEDITION
to the
GUNUNG MULU
NATIONAL PARK
SARAWAK

During January 2024
Expedition Leader: Tim Allen
Edited by Tim Allen & Chris Scaife



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Introduction

Tim Allen

This is the report of **Benarat 2024**, the 32nd Anglo-Sarawak Expedition to Gunung Mulu National Park and a part of the wider **Mulu Caves Project**.

The expedition arrived in Gunung Mulu National Park on 29 December 2023 and departed on 21 January 2024. Once preparations had been made at Park Headquarters, the expedition left for Camp 5 on 31 December and stayed there for a period of 20 days. The team would follow up on the Benarat 2020 expedition focusing on exploration, surveying and photography in Gunung Benarat, with the following objectives.

Primary caving objectives:

1. Locate the upper Cobweb entrance from the outside.
2. Further explore the high levels of Cobweb Cave: north via Justamile and south via Moonshadow.
3. Explore any passages in Cobweb that might lead to a connection with the Terikan River System.
4. Investigate the cliff face entrance in the south-east corner of Gunung Benarat.

Secondary caving objectives:

1. Explore other leads in Cobweb Cave.
2. Revisit Gawai Cave and other surface features in northern Benarat.
3. Other objectives that may present in the field.

General objectives

1. Review survex database and resurvey 'fake' data where possible.
2. Cave photography.

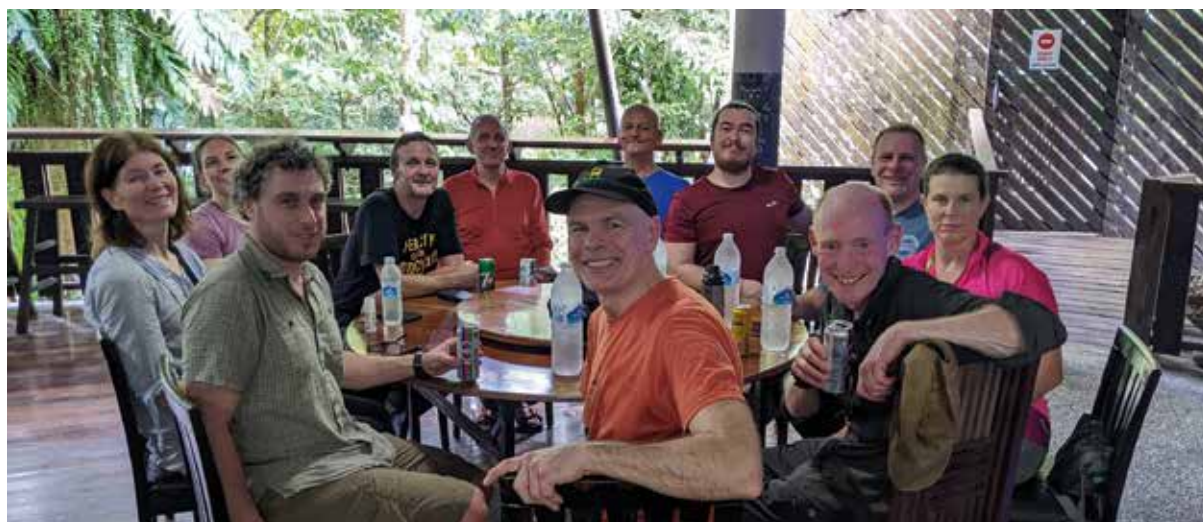


Figure 1: Becka Lawson, Loz Appleby, Chris Scaife, Mark Wright, Frank Pearson, Pete Hall, Tim Allen, Will Yu-Pearson, Stuart Weston, Mark Burkey and Lisa Wootton at Park HQ. Photo courtesy of Chris Scaife

Location

The Gunung Mulu National Park is situated in north-eastern Sarawak within the Limbang and Baram Divisions, with its north-west boundary forming part of the border with Brunei Darussalam (Figs. 2 & 3). It was officially constituted in 1974 and opened to visitors in 1985 and lies approximately 4° north of the equator. The original boundary of the park covered an area of 528 sq km. Gunung Buda National Park was established in 2000 and with extensions to both parks the totally protected area now stands at 972 sq km.



Figure 2: Map showing location of Mulu in Borneo

Centre point of the Totally Protected Area

4 degrees, 08 minutes, 16.58 seconds north
 114 degrees, 53 minutes, 32.32 seconds east
 UTM Zone 50 N Easting: 45670. Northing: 86750

World Heritage Area Gunung Mulu National Park	(1974)	528.64 km ²
Gunung Mulu National Park Extension No 1	(2011)	45.55 km ²
Gunung Mulu National Park Extension No 2	(2011)	285.30 km ²
Total Area of the Gunung Mulu National Park	(2011)	859.49 km ²
The Gunung Buda National Park	(2000)	62.35 km ²
The Gunung Buda National Park Extension No 1	(2011)	50.62 km ²
Total Area of Gunung Buda National Park	(2011)	112.97 km ²
Totally Protected Area	(2011)	972.46 km²

The caves of Gunung Mulu National Park

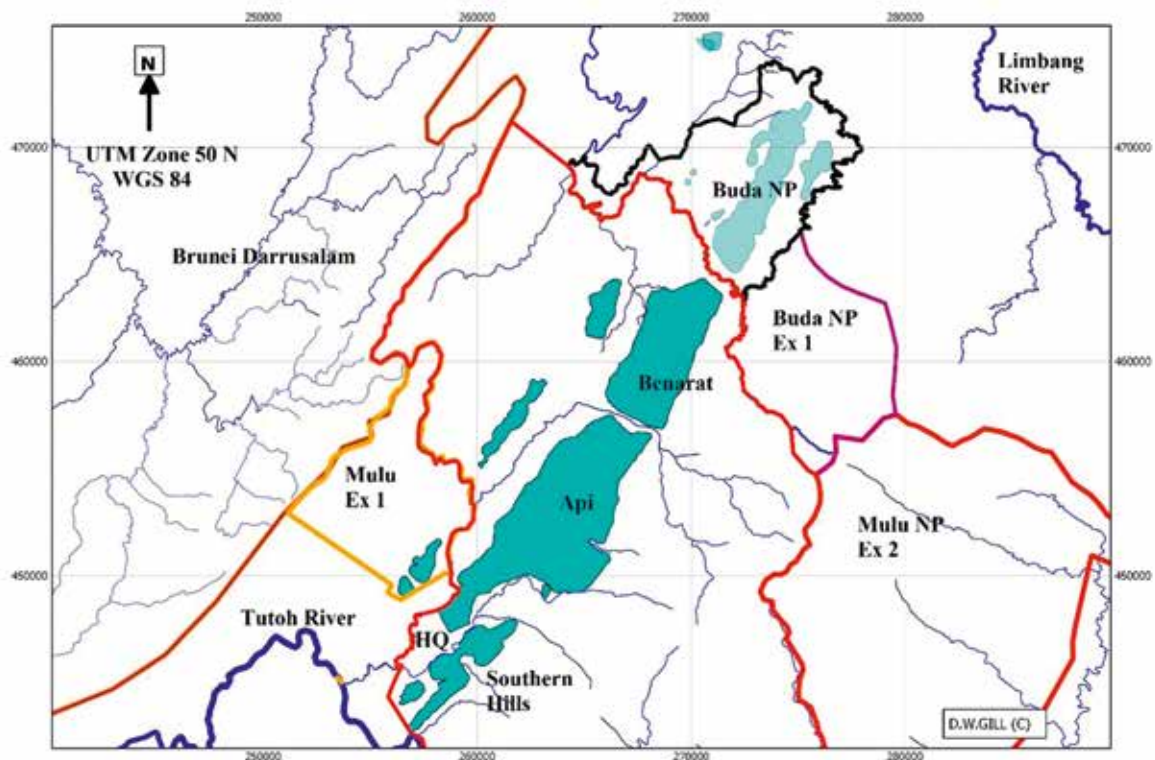


Figure 3: Map of the main cave-bearing regions of Gunung Mulu National Park

The national park is dominated by the sandstone mass of Gunung Mulu, which rises to 2,376m. To the west of Mulu, and on its flank, lies a band of 'Melinau' limestone, which forms the lesser peaks of Gunung Api and Gunung Benarat. The lower slopes are covered in dense tropical rainforest, which rises to meet the montane forest of Mulu's upper slopes.

Mulu is home to a rich mixture of plant and animal life and in the limestones, beneath the forest canopy, lie some of the world's most impressive caves.

The existence of large caves in the Gunung Mulu area of northern Sarawak was certainly known by the indigenous population for many centuries; some have been used as burial places. Western interest has been documented for over 150 years. In 1858, reference was made to: "Detached masses of limestone, much water-worn, with caverns and natural tunnels" around the base of Mulu by Spenser St. John in his book *Life in the Forests of the Far East* (St. John, 1862).

St. John was 'Consul General in the Great Island of Borneo' and made some of the earliest exploratory journeys of any European into the interior of Sarawak. His attempts to reach the summit of Mulu were thwarted by limestone cliffs, dense forest and sharp pinnacles of rock and he says: "It is almost impossible to conceive the difficulty of ascending this mountain". Mulu was to keep the secrets of its summit for a further 74 years until Edward Shackleton successfully climbed the mountain during the Oxford University expedition of 1932 (Harrison, 1938).

In 1961, G.E. Wilford of the Malaysian Geological Survey visited the area to explore its caves. His work included the surveying of Deer Cave and parts of Cave of the Winds. He predicted that Mulu would yield many more caves in the future, (Wilford, 1964).

History of exploration under Gunung Benarat

In 1977-8 the **Royal Geographical Society Mulu Expedition** spent 15 months in the area studying many aspects of the rainforest. This was the largest scientific expedition ever to leave the UK. Included in the team were speleologists who, in three months, explored and surveyed 50km of cave passages. Although focused mainly on Gunung Api and the Southern Hills, amongst the discoveries were the first explorations of the main resurgence of Gunung Benarat. This included Terikan Rising, Terikan East and West, accessed mostly from inlets along the alluvial plain and separated by sumps. Exploration ended upstream at sump number four. High up on the vertical cliffs of the Melinau Gorge, several obvious entrances were noted, the largest of which was known locally as Tiger Cave. The only cave entered was at the base and called Tiger Foot Cave, later to be renamed Benarat Caverns. This was left with an enticing draughting lead at Way-on Aven.

As a result of the RGS expedition, two large scale caving expeditions were mounted in the early 1980s. The **Mulu '80** expedition visited the Southern Hills, Gunung Api, Gunung Buda and Gunung Benarat. The Terikan River Caves were extended with the discovery of Blue Moonlight Bay Cave. Although separated by undived sumps, this was clearly the upstream continuation of the resurgence system and was surveyed for 9.4km. Way-on Aven in Benarat Caverns led to major discoveries of trunk passages heading deep into the hill. Sakai's Cave was explored via five pitches to old horizontal passages. Leads in both caves were left ongoing.

In 1984, the **Sarawak '84** expedition made a return with objectives across the Mulu limestone. There was more focus on Gunung Benarat, where both Sakai's Cave and Benarat Caverns were extended. But the major discovery was of Cobweb Cave, which led to a complex mid-mountain system of over 15km. North of the Cobweb entrance, the shorter marginal caves of Menagerie, Deception and David's Caves were explored. In the north the major surface feature, known as Gawai, was reached, but the passage was found to be choked. A determined climb up the Benarat cliffs in the Melinau Gorge reached a lower entrance to Tiger Cave leading into 3.8km of high-level passage.

Over the next decade or so British exploration in the area focused on Gunung Api, Blackrock Cave in the west and Hidden Valley in the east, where many discoveries were made. It was not until **1997** that a significant discovery in Gunung Benarat was reported. An American expedition exploring the caves of Gunung Buda crossed the Medalam River and discovered Deliverance Cave in the northern tip of Gunung Benarat where 3.6km of major Mulu trunk route was discovered heading south. They returned in 2000 and made some small extensions to the cave.

Also in **1997**, a Japanese expedition visited Mulu. Little information was made available as they did not produce a report although they supposedly mapped a 1.7km long cave in the Gawai area. To date this has not been located or confirmed.

It was 16 years before another Sarawak-British expedition returned to Gunung Benarat in the shape of **Benarat 2000**. Cobweb Cave was the major objective and was extended both to the north and south amounting to 10km of new passages. On the final day of the expedition a choked entrance in the Melinau Gorge was forced, to enter Hurricane Hole, which looked set to connect with Benarat Caverns as time ran out.

As a follow-up to the 2000 expedition, the **Benarat 2003** expedition returned to the park. Hurricane Hole was soon connected to Benarat Caverns and 1km of passage added to the total. A further 4.4km was explored in Cobweb Cave at both ends of the system. The significant discovery of the expedition was made in Terikan Rising Cave where 12.5km of passages were explored, including the impressive River of Sound, which led to new entrances to both the west and north of Batu Mentawai. This system was also connected to Menagerie and Deception Caves to the south, but ended a frustrating 300m from passages in Cobweb. A connection was also made between Terikan East and Blue Moonlight Bay Cave. This left just a short sump separating the two parts of a 32km system.

A significant event took place in Gunung Api during this expedition with the discovery of Whiterock Cave. From 2003 to date most of the exploration effort has focused on this cave, which is now over 100km long, and work in Benarat thus became reduced to just a few small projects.

Benarat 2005 included two cave divers who dived the sump between Terikan East and Terikan West, making a system with a total length of 32.5km. The upstream sump of Blue Moonlight Bay Cave was dived to -53m deep but was found to continue going down beyond the limit of the equipment. This was a surprise as, until now, the sumps in Mulu had been found to be shallow. In the Melinau Gorge an attempt to climb up to an entrance high in the cliffs opposite Camp 5 was cut short when a small entrance was discovered only 60m above the ground. This cave was named Moon Cave and was explored for 6.6km in an almost straight line into the mountain. A connection was also established with Benarat Caverns, making the total length of this system 16.4km.

During January and February 2007, the **Mulu Caves '07** expedition continued the exploration of Moon Cave where a significant connection was made with Cobweb and over 3km of passages mapped. The new Benarat Caverns system now ranked as second longest in the park at 50.7km.

The **Mulu Caves '09** expedition managed to negotiate access to the nesters' cave high up in the southern cliffs. The exposed 70m abseil into Hole of the Moon led to 2.5km of ancient passage heading into the hill at the same level as upper Tiger Cave. Hurricane Hole was revisited and the Mother of all Voids descended.

A project on the **Mulu Caves 2011** expedition established series of Geodetic GPS fixed points around the park to better understand the relative levels of the caves within the Survex dataset. Included were stations at Terikan Rising, Cobweb and Benarat Caverns. The expedition relocated the Gawai feature at the north end of Benarat. It was not fully explored but nearby Paradise Cave was discovered and surveyed for 1.1km. This cave appears to be a missing part of the main fossil trunk route between Blue Moonlight Bay's Casting Vote and the River of Sound in the Terikan system. The Big Feature to the east of Hole of the Moon was partly investigated but no significant cave was found.

October 2013 saw the **Mulu Caves 2013** expedition based at Camp 5. A sub-camp was set up at the northern end of Benarat and a number of serious climbing leads explored in Deliverance Cave without significant success. Gawai Cave was revisited and an open pitch was found, thought to be above Blue Moonlight Bay, but it was not descended. In the southern cliffs a 350m abseil down the full Benarat face reached a prominent entrance visible from Camp 5, but there was no way on.

During the **Mulu Caves 2015** expedition an entrance in the south-east corner of Benarat was identified in the cliffs above the tree line. Attempts to climb up to the entrance were unsuccessful.

Mulu Caves 2019 returned to the Mother of all Voids in Hurricane Hole and aid-climbed for 100m above the entry point without reaching the top.

The **Benarat 2020** expedition focused solely on Gunung Benarat. Sakai's Cave was revisited for the first time in 36 years. A small extension was discovered, the survey updated and a photographic record made. Cake and Cheese in Moon Cave was pushed to a disappointing conclusion. Several climbing attempts failed to reach the fabled Corner Cave. Climbs in the Monolith area of Cobweb Cave were more successful and led to a route up into Justamile. Further wild climbing in this area discovered over a kilometre of passage, left open, and heading into a significant area beyond the downstream sump. In Blue Moonlight Bay several remote leads were examined but not pushed to a conclusion.

The total length of caves surveyed in Benarat was now 104.047km.



Figure 4: Will Yu-Pearson and Frank Pearson in the Melinau River. Photo: Tim Allen

The Team

Benarat 2024 fielded a team of 11 cavers from the UK, supported by local organiser Veno Enar. The expedition was further enabled by the management and staff of Gunung Mulu National Park. All the UK team were highly experienced cavers and six had extensive experience of caving in Mulu on previous expeditions.

From the UK – Tim Allen (leader), Loz Appleby, Mark Burkey, Pete Hall, Becca Lawson, Frank Pearson, Chris Scaife, Stuart Weston, Lisa Wootton, Mark Wright, Will Yu-Pearson.

From Sarawak – Veno Enar, Steve Lian, Balang, Jimmy, Jarah.



Figure 5: Benarat 2024 expedition team members at Camp 5. From left to right: (back row) Balang, Chris Scaife, Steve Lian, Will Yu-Pearson, Frank Pearson, Tim Allen, Becca Lawson, Pete Hall, Stuart Weston, Loz Appleby; (front row) Mark Wright, Veno Anar, Lisa Wootton, Mark Burkey. Photo courtesy of Mark Burkey

Acknowledgements

In Sarawak:

- The Chief Minister of Sarawak
- The Sarawak Secretary of State
- The Director of Forests, Sarawak
- Controller of National Parks and Nature Reserves
- Controller of Wild Life

- Protected Areas & Biodiversity Conservation Unit, Sarawak Forestry Corporation
- The Sarawak Ministry of Planning and Resource Management
- The Resident, Miri Division
- The Sarawak Immigration Department
- The Sarawak Police Department
- Gunung Mulu National Park Management & Staff

In the UK:

- Mount Everest Foundation
- Ghar Parau Foundation
- Spanset Ltd
- Matt Kirby
- Howard Jones
- Dick Willis
- Hugh St Lawrence
- Members of the Mulu Caves Project

Equipment and Logistics

The Mulu Caves Project maintains a caving store in the Research Centre at National Park HQ. This enables most of the group caving equipment to be reused on each expedition and saves the expense and environmental impact of transporting kit around the world. The Benarat 2024 team brought out 550m of rope (donated by Spanset Ltd) and a few anchor fixings to top up supplies in the store. Survey and photography gear was brought out along with our personal equipment, all within the standard travel baggage allowance.

An advance team spent several days in Miri purchasing food supplies, and these were transported up to Mulu by road and river. After a day's sorting at HQ, 32 porter loads were made ready and these went up the river over the following two days. Each load weighed approximately 18kg. Local boatmen and porters were employed for this task, mostly coming from the village of Batu Bungan. On the second day of portering, the whole team moved up to Camp 5: a journey of an hour by longboat (depending on river levels) followed by a 9km walk. Each member carried their own personal equipment.

A local camp manager/cook and an assistant were employed for the duration of our stay at Camp 5. We took our own generator for power and a freezer to keep food fresh for longer periods. This was restocked at intervals during our stay. Other non-perishable foodstuffs were stored in dustbins to keep them secure from animals. Most meals were taken at Camp 5, but expedition members catered for themselves when away from base, either in underground camps or out on day trips. On completion of the field work all gear and rubbish was carried out.

It is worth noting that Camp 5 was closed to tourists during our stay, for maintenance, and as a result we enjoyed a reduced rate.

Back at HQ, any perishables were removed from the store and given away, and a new inventory was carried out to pass on to the next expedition.

Exploration Results

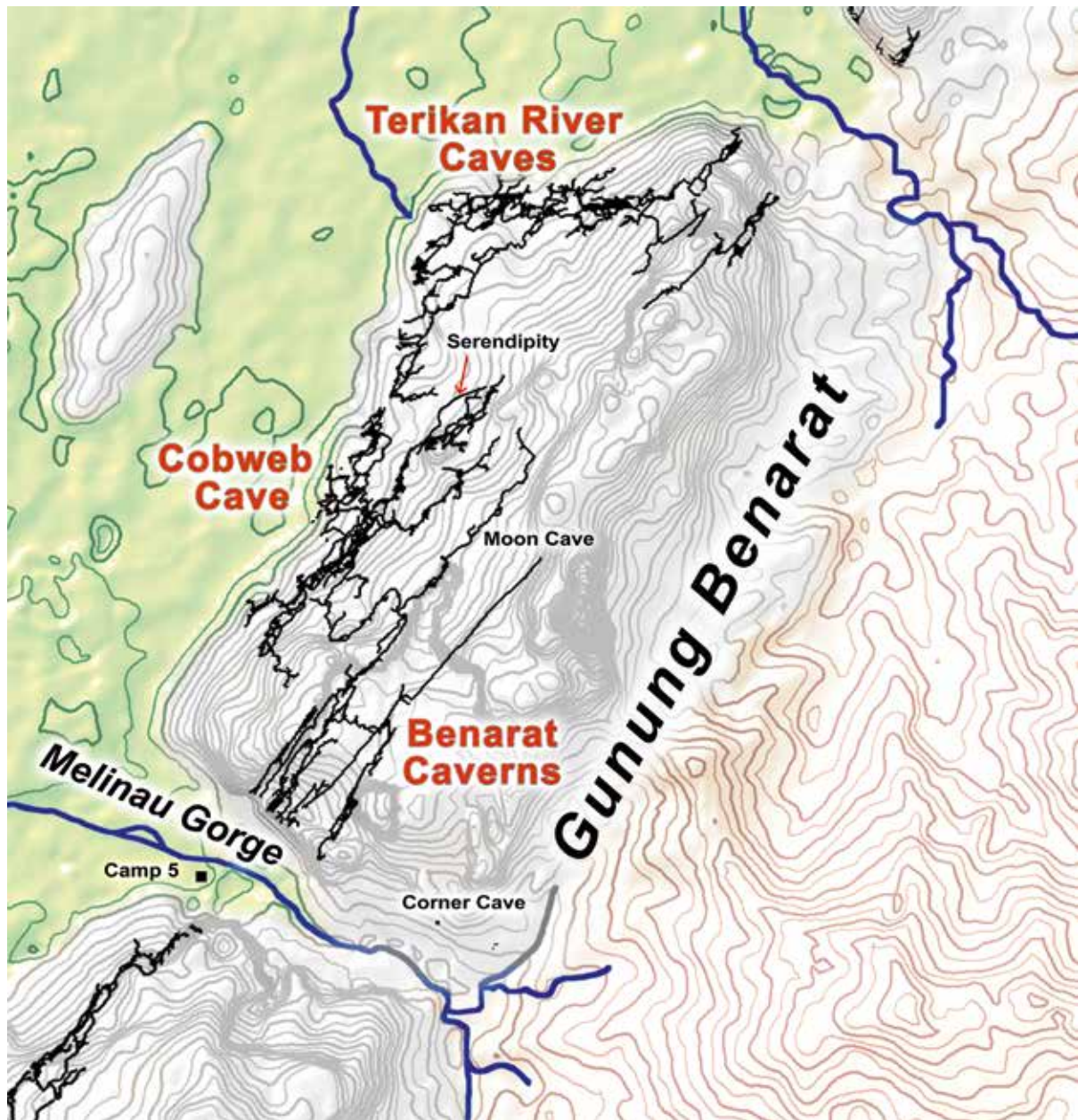


Figure 6: Map showing the caves of Benarat with the areas investigated during the expedition highlighted

Benarat Caverns system

Cobweb Cave, locating the entrances

Tim Allen

The lower Cobweb entrance is easy to find, if – and it is a big if – you know the correct place to turn off the Headhunters Trail. Consequently, on our first attempt, I turned off too soon and we failed to locate the entrance after many hours of searching. This was not all bad news as we found a previously unknown cave and located a valley that proved to be the best route to the upper Cobweb entrance. Here are some directions to help locate lower Cobweb, the main entrance.

Locate the 4km marker on the Headhunters Trail. After approximately 350m the limestone comes down next to the trail for a short distance before disappearing again. After another 200m some white cliffs appear, visible through the trees. Turn off east just beyond this. The alluvial plain is flat here and the limestone only 30m from the main trail. The entrance is 45m higher and not visible from below. Although large and draughting it is a 10-minute scramble up to where the entrance becomes obvious.

Main Cobweb entrance – 50N 267441 461014 (professional Leica GPS taken over several hours)

The upper Cobweb entrance was found during the exploration of Justamile, from the inside, in 2000. Despite several attempts to locate it from the outside during the noughties it remained elusive. Following the discovery of a new route up to the high levels via Monolith in 2020, a further attempt was made from the inside to cut track down to the Headhunters Trail. This floundered in difficult terrain and thick vegetation and the team abandoned the attempt and returned through the cave. The location of this entrance became a top priority for Benarat 2024 in order to access a number of leads in the high-level passages. A valley that breeched the cliffs had been located on aerial photographs and this had been located on the ground during the search for lower Cobweb. A combination of GPS and local track-cutting knowledge was then used to successfully locate the entrance. Here are some directions to help locate the upper Cobweb entrance.

Locate the 4km marker on the Headhunters Trail. After approximately 300m, turn off east to meet the edge of the limestone. There is a valley that cuts up through much steeper ground although it is more obvious some 50m up. The route follows this valley feature on the right-hand side. Reaching some low cliffs it passes the draughting Rattan Cave and continues up through difficult terrain, up and over a ridge. This drops back into the head of the valley feature where the entrance is located on the far side. The entrance is 200m higher and a direct line distance of just 450m from the Headhunters Trail but takes approximately an hour to climb up to once the track is cut.

Upper Cobweb entrance – 50N 267547 460368 (handheld GPS reading taken in 2020)



Figure 7: Stuart Weston just inside the upper entrance to Cobweb Cave. Photo: Chris Scaife

Serendipity River Passage

Chris Scaife, Becka Lawson, Stuart Weston, Lisa Wootton

We set up our first underground camp, on 5 January, just inside the upper entrance to Cobweb Cave. Having arrived with a few hours to spare, Becka and I decided to head off to explore an inlet (Fill Your Boots, see p20). We returned to see Stuart white as a sheet. As evening had drawn in, the swiftlets had been bombarding him and Lisa in a Hitchcockian manner – apparently our first choice of campsite had been quite popular with the subterranean birds. We therefore moved quickly to a new site, where our feathered friends were much less active, and of course we had to give this new spot the name Swift Retreat Camp.

Up early the next day, we found our way through Justamile Passage, helped greatly by the reconnaissance trip Becka, Stuart and Lisa had had in there a couple of days earlier. We followed the route as described on p60 to stop for lunch at Outrageous Junction, then ascend the rope left by the 2020 team into Sceptics' Contrition. The 1km of passage found by the previous team was highly impressive stuff and mostly quite easy going, featuring much clambering over boulders with the walls far apart and the ceiling high above our heads. We were aware that the open lead in here was one of the best prospects for our expedition and were certainly not disappointed when we reached the previous limit.

The way on was enormous, just like the 1km of Sceptics' Contrition we had followed to reach it. After 121m, our hearts skipped a beat when we found a gargantuan river passage intersecting our dry passage. There were now three promising leads – upstream and downstream in the river, and up an easy climb on the opposite bank into a passage of similar dimensions to the one we were in.



Figure 8: Tim Allen and Chris Scaife at the start of Serendipity River Passage. Photo: Mark Burkey

We used a 20m rope, rigged from a solid boulder, to descend the mud slope and 3m vertical drop into the water. It was quite late in the day by now, but as the four of us stood knee-deep in this unexpected river passage, looking at big open unexplored space stretching as far as the eye could see in three different directions, thoughts of turning back couldn't have been further from our minds.

It was a unanimous decision to head downstream first, all together. The river was slow moving, at least 5m wide and rarely above knee-deep, although there were a couple of sections that were deeper and we waded or pussyfooted around the edge. The dimensions varied a little, but mostly the passage was about 10m wide and 15m high. There were few formations, but the meandering river, with its shingle banks, inlets from the roof, little sections of micro rapids and a rock shaped like a Polar Bear, felt like paradise. After surveying 726m, we reached a point where the ceiling lowered to just a few metres above our heads and the water became chest deep. It was quite late by this point, and we had a long return journey of several kilometres underground, so we turned back and spent another night at Swift Retreat Camp.

We returned to Serendipity River Passage a few days later and this time split into two teams. I continued the downstream exploration with Lisa; Becka and Stuart went upstream.

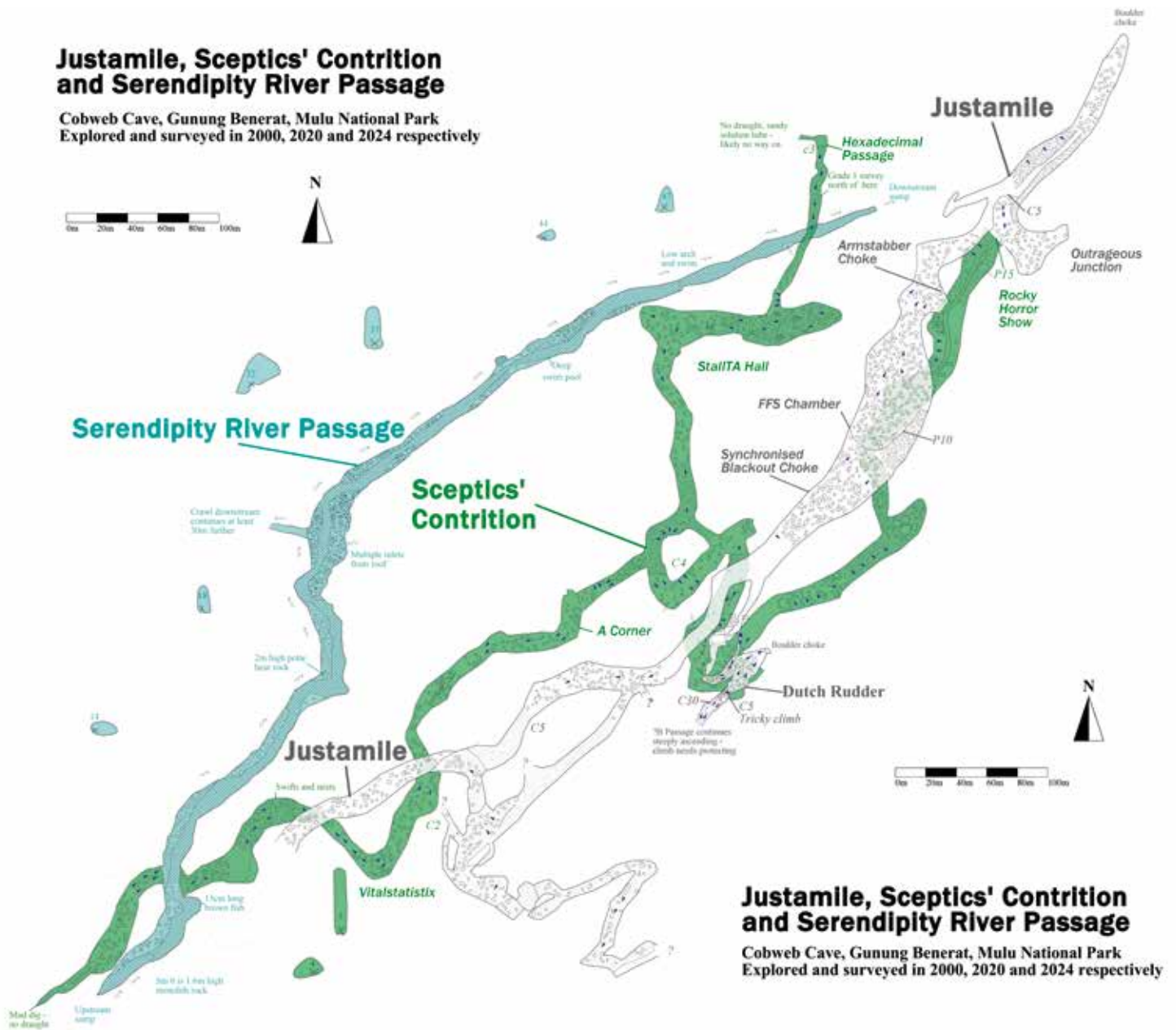
We swam through the low (for Mulu – it was still several metres high) section and beyond was initially the familiar large, meandering river passage. However, after about 150m, the ceiling lowered abruptly to a sump. We returned upstream and saw that Becka and Stuart were already on the climb up the bank opposite the pitch – upstream had done more or less the same as downstream, looking wonderful for about 150m and then ending abruptly at a sump.

Together again, we surveyed the dry passage that was effectively the continuation of Sceptics' Contrition, on the left bank. Again, this started out huge; but once around a couple of corners we reached a sandy crawl that terminated as a draughtless no-hoper. We headed back to Swift Retreat Camp with several hundreds of metres of capacious new cave passage to our names, but with a feeling that things couldn't really have gone much worse. Three incredibly promising leads had closed down all too soon. But we should hold our heads up high as we had found 1,094m of new cave passage – all big, impressive, proper Mulu stuff – including the longest section of river passage found so far under Gunung Benarat.

By 16 January, most members of our expedition team were indisposed, so the photography trip featured the four survivors – Tim Allen, Mark Burkey, Will Yu-Pearson and me. This time we eschewed the Swift Retreat and settled for a single long day. With route finding no longer a concern, we spent fourteen hours underground and about two hours walking to and from the entrance. On the way in, Loz, Becka and Stuart joined us as far as FFS Chamber. They then sneaked off for some Dutch Rudder action (see p22).

Justamille, Sceptics' Contrition and Serendipity River Passage

Cobweb Cave, Gunung Benerat, Mulu National Park
Explored and surveyed in 2000, 2020 and 2024 respectively



Justamille, Sceptics' Contrition and Serendipity River Passage

Cobweb Cave, Gunung Benerat, Mulu National Park
Explored and surveyed in 2000, 2020 and 2024 respectively



Figure 9: Will Yu-Pearson in Serendipity River Passage. Photo: Mark Burkey



Figure 10: Chris Scaife close to the downstream sump in Serendipity River Passage. Photo: Mark Burkey

Notes on Benarat's underground drainage

Tim Allen

With the discovery of Serendipity, another large piece of Benarat's underground drainage has been revealed. It is the largest single section of river passage known under the mountain, but the total picture is still far from clear.

The Benarat Caverns system has five known sections of river passage. Starting in the south and heading north-east there are Streamways Zero, One, Two and Three, and Serendipity – the farthest north. The survey concludes that these are all part of the same river drainage. However, the source, south of Streamway Zero, remains unknown. Speculation suggests that it must be a combination of percolation water and leakage from the Melinau River, but this is not certain. Several sinking streams exist along the western flank of Benarat but these all soon dry up after only a few days without rain. They also appear to sink too far north to be the source.

At the northern end of the mountain, the Terikan River is undoubtedly the major resurgence. This can be followed upstream through the Terikan sumps to Blue Moonlight Bay where it sumps for the last time. This was dived in 2005 to a depth of 54m, with the underwater route continuing down – unusual as all the other sumps appear to be quite shallow. The straight-line distance between the sumps in Serendipity and Blue Moonlight Bay is 1.8km, so it is almost certain that further sections of dry passage must exist in between.

Joining the Terikan in Blue Moonlight Bay is the significant feeder of the Nilong River. This must have its source much farther east towards the Medalam River. One final mystery is the resurgence of the Troll River, located less than 1km south-west of the main Terikan resurgence and joining that river at the Lubang Cina river crossing. It is speculated that this must be associated with the marginal caves, yet it is not seen underground.

Fill Your Boots

Chris Scaife, Becka Lawson

While Stuart and Lisa were busy being bombarded by swiftlets at our first underground camp, the afternoon before we found Serendipity River Passage, Becka and I went to have a look at an inlet on the right wall, reached by an easy climb just past the first choke in Justamile. A small spout emanating from the inlet close to the floor in the main passage was a useful water source for the underground camp and subsequent longer trips.

We knew that previous explorers had turned back a short distance along this inlet as they were not fond of the gloopy mud, so we were surprised by how pleasant it was in there – a round, smooth-walled, standing-height passage with just a couple of places where the mud was about knee height and did indeed fill our boots. First we went right and soon reached a too-tight hole with swiftlets flying through. We then followed the left fork and, after plodding through the gloopy mud, found some easy traverses leading to a short loop with fine formations, with a total of 157m surveyed on our first foray. The morning after finding Serendipity, we returned to fill our boots with whatever was left in there. It was something of a rabbit warren with loops all over the place: some crawling, some steep slopes, but mostly walking. We have left future generations a few minor leads in here, including a crawl heading towards a blank space on the survey and a biggish space that could be entered by shifting a couple of rocks. In total, we surveyed 269m in this inlet.

Fill Your Boots

Cobweb Cave, Gunung Benerat, Mulu National Park

Surveyed by Chris Scaife, Becka Lawson
Drawn in Tunnel X by Becka Lawson, April 2024

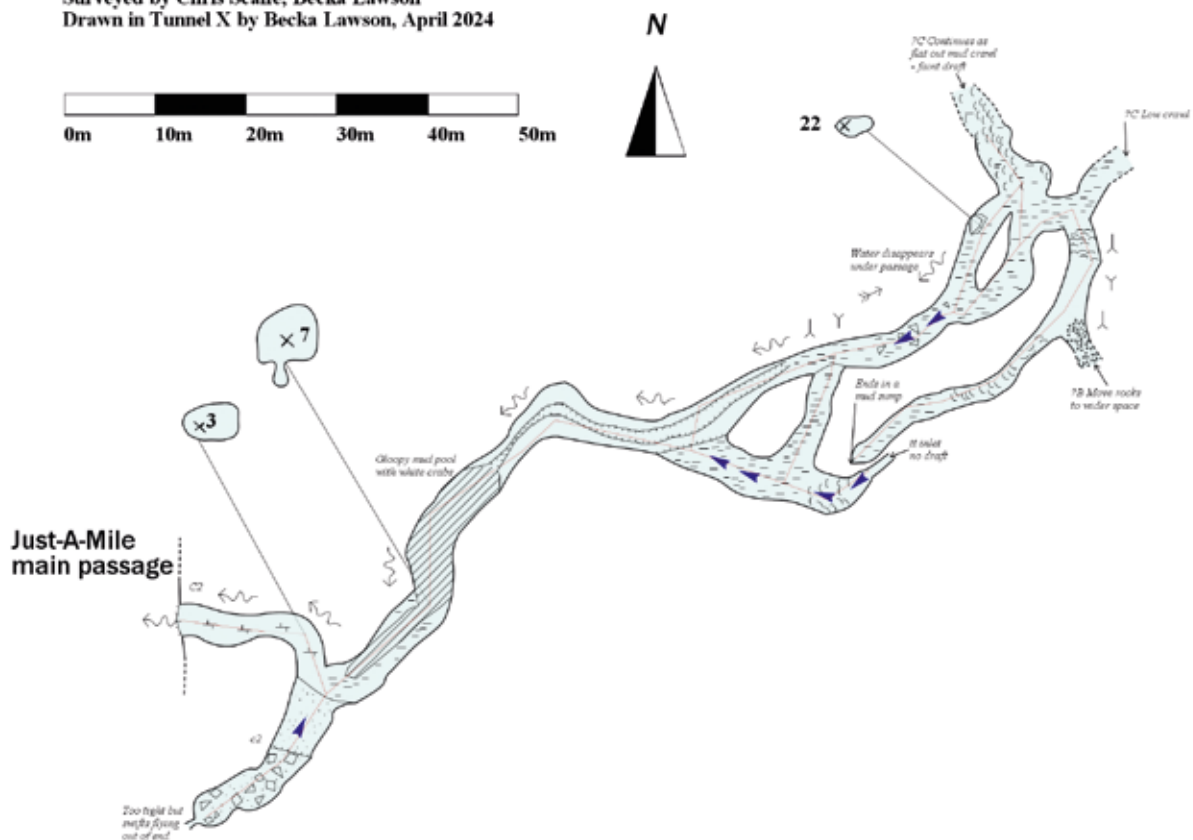




Figure 11: Becka Lawson in Fill Your Boots. Photo: Chris Scaife

Dutch Rudder

Becka Lawson, Loz Appleby, Stuart Weston

After helping to ferry bags for the Serendipity photography team, I was determined that Stu, Loz and I would make the most of having time to poke around in a relatively unexamined part of the Upper Cobweb system. We decided to systematically check out side leads on our way back down Justamile from FFS Chamber.

The first, obvious, large passage on the left soon reached a fork. We split and Stu scrambled up a steep boulder pile on the left to find a draughting squeeze, whilst I crawled under formations on the right. This opened into a low chamber with a crawl leading off to a really small, popcorn hole looking up into black space (more of this later).

We reconvened at the fork and Loz and Stu went to fetch a rope to haul boulders from the choked squeeze whilst I looked at the choke. I managed to manoeuvre some boulders far enough to create a bypass to the choke. I crawled through and soon popped out halfway up a huge chamber. Hurrah, something worth surveying.

I returned to Stu and Loz and we surveyed into the chamber, then down steeply to where it hit a big boulder choke. We then surveyed steeply up the chamber. This became more and more precarious – steep, muddy and with extremely loose boulders. Stu bravely volunteered to go first with the rope and we continued, cautiously. We gained a few more hard-won legs before sense prevailed and we called it a day although this is an open lead: “Risk Averse Climb”. It needs either somebody with more gear than we had or a very bold climber.

We teetered back down to where we had entered the chamber, then noticed a sizeable passage leading off the chamber, from a ledge just above where we had popped out. This descended steeply and then closed down at a small, draughting popcorn hole – the very one that I had reached from the other side at the start of the trip, so that tied up a loose end. To our surprise, we found a triangular reflector here like the ones used by the 2019 explorers* – it’s a mystery why it was there and who placed it.

Sadly, we had no time to properly check out the other leads along the left wall as we exited but I scampered along them all and I think it would be well worth having a trip to them – take rope and rigging gear as there are pitches.

** I’m just finishing a long drive to Ario, Spain, with Mark Sims. I asked him about the reflective markers in Justamile and he was adamant that they didn’t put any in in 2019, although he wasn’t sure if they might already have been there.*

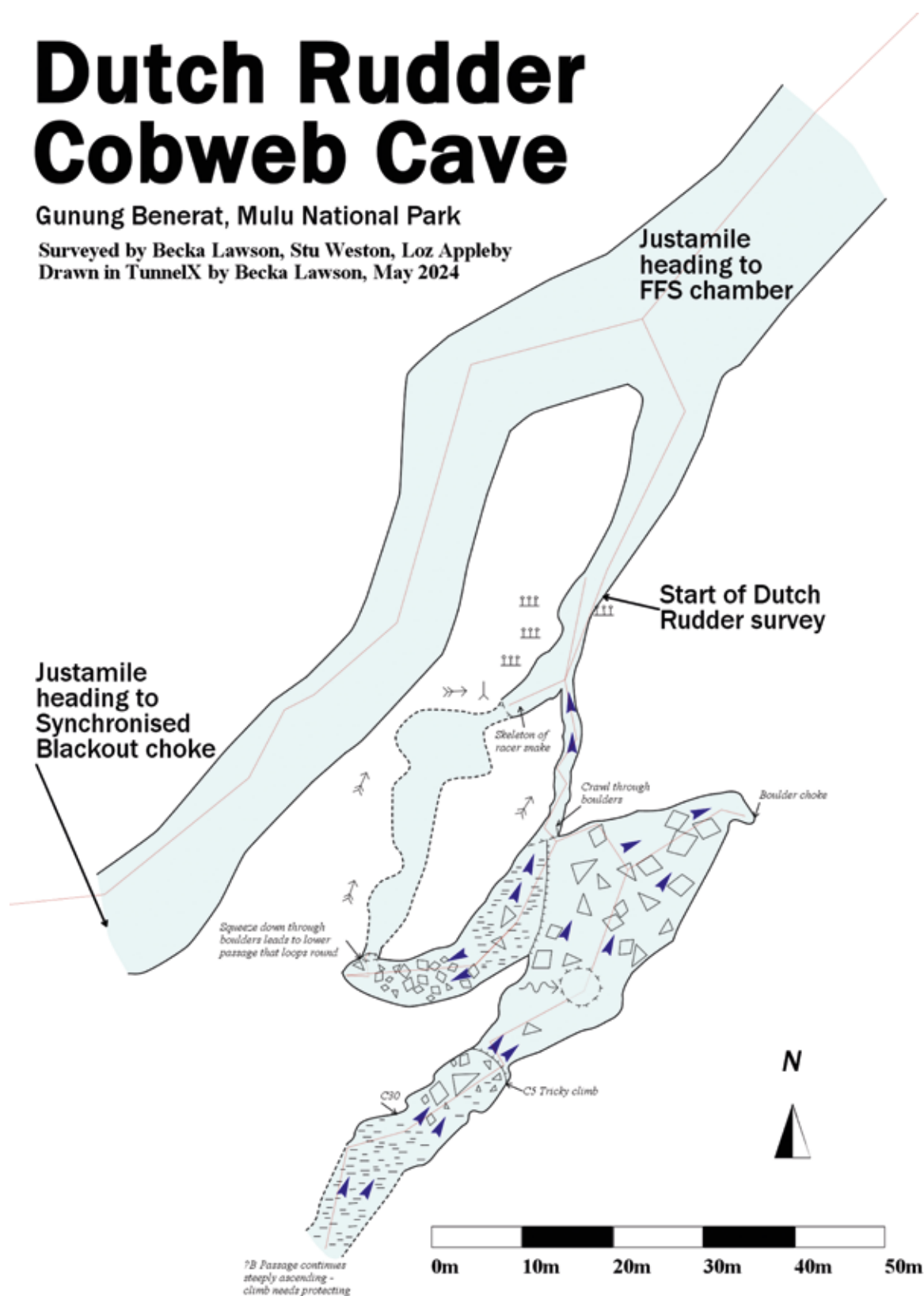
Becka Lawson, June 2024

Dutch Rudder Cobweb Cave

Gunung Benerat, Mulu National Park

Surveyed by Becka Lawson, Stu Weston, Loz Appleby

Drawn in TunnelX by Becka Lawson, May 2024



Hexadecimal Passage

Chris Scaife, Becka Lawson, Stuart Weston, Lisa Wootton

On our way back through Sceptics' Contrition after our second visit to Serendipity, we went to have a look at this promising lead, an undescended pitch heading north towards the Terikan River system. I descended using a 20m + 18m + 15m rope, all tied together. At first I was on a 45° slope, but this became steeper lower down, then more gradual. As we had no more rope, I free-climbed the remainder of the slope to a solid floor that soon hit a blank wall, with a draughtless no-hoper of a solution tube veering off to one side. The clock was ticking by this point, so we did not survey this extension, but I would estimate its length as about 80m.

Connection with the Terikan River system

Tim Allen

A connection between the Benarat Caverns system in the south and Terikan River system in the north does look likely, on paper at least. Even 20 years ago the distance between the two systems was just 250m. Much searching back then in the area between the Cobweb entrance series and southern parts of Deception Cave failed to find any link. It became obvious that a surface valley had played a major part in truncating the two caves in this area and that any connection would have to be away from the margins and deeper into the hillside.

In 2020, extensions were made to the northern parts of upper Cobweb and leads in Hexadecimal Passage particularly gave hope of forging a connection. Research into the original logbook entries for the discoveries in southern Deception Cave, Parangs and Thunder area, mentioned an unclimbed aven in this area so linking the two was possible. Unfortunately, on examination, the Hexadecimal lead fizzled out with no noticeable draught. Perhaps a renewed exploration of Deception is the next logical step in the search for this connection.

Nevertheless, the discovery of Serendipity has moved the two systems closer together and the gap now stands at just 110m. This is between the closest part of Deception Cave and the new river passage. Unfortunately, neither appears to be part of the same cave development so in some sense the two caves are just as far apart as before.

A connection would create a single cave system over 87km in length, which would traverse the mountain completely, from north to south.

Just Desserts

Tim Allen, Loz Appleby, Mark Burkey

This was the name of a passage discovered in 2000 in the high levels of Cobweb Cave. It formed the broadly eastern-trending passage from the breakthrough at LED the Way. Significantly, close to the start of the passage was the connection point to Moon Cave, which entered as a roof-level passage. East from this point, Just Desserts had probably never been entered since its discovery. It was therefore thought worthy of reinvestigation. Research of both the 2000 and 2007 surveys revealed little of interest. The passage lined up with Criminal Damage in Moon Cave, which also had a lead. However, a review of the original survey notes showed a dotted passage close to the end, but heading north, in a direction away from Moon Cave. This had a note suggesting the passage was 20m up and with swiftlet activity.

Mark B, Loz and I set off to look at this lead on our first trip from the newly-located upper Cobweb entrance. En route we found and checked out the connection passage to Moon Cave. Just beyond, the main passage appears to choke, but a steep ascent up a mud and boulder slope leads to a smaller passage in the roof. This immediately drops steeply to a pitch. A 35m rope is necessary to navigate the steep slope and the pitch, both of which can be rigged on naturals. At the bottom the passage continues but is very dry, with guano deposits and no noticeable draught. Nearing the end there is a very steep, muddy slope which really requires a rope. It is big here, but the route closes down in sediment after just 50m. In the roof, looking back in the opposite direction, there is an alcove with swiftlet activity about 20m up. However, it appears to be a rift on the joint, closing in as it goes out of sight. The lack of any draught leading up to this point persuaded me that it was not worth further investigation with climbing equipment.

Lower Cobweb, Elephant Warren

Mark Burkey

Following the discovery of the Serendipity River Passage, it was noticed that there was quite a large gap between the old downstream end in Streamway Three and the upstream sump of the new passages. Looking at the survey Tim noticed that a washed boulder choke area he had seen in 2020, but not explored, was directly over the line between the two sumps. As the lengths of sumps upstream of here was only short there was reasonable potential for another section of open river.

Therefore, having visited the area before, I showed Loz, Becka, Chris, Stuart and Lisa through to the Elephant Warren where we explored all possibilities in the washed boulder choke. Unfortunately, no way through was found.

Moon Cave area

Areas of Moon Cave were accessed by the surface route to the upper Cobweb entrance. Since the Moon to Cobweb connection was made in 2007 no one had re-visited the areas of Moon Shadow and Super Trooper. With the accessibility the route to the new entrance offered the connection point could be reached in little more than half an hour.

Moon Shadow pitch

Tim Allen, Mark Burkey, Will Yu-Pearson

This pitch is located in a side passage just two legs from the connection point. Will descended on a 37m rope and reported the pitch continued down quite small with old crusty calcite. A review of the Survex data later showed that this is most probably associated with a small ramp off Black Stone Passage. A return was not considered worthwhile.



Figure 12: Will Yu-Pearson in Moon Shadow. Photo: Mark Burkey

Criminal Damage

Mark Burkey, Loz Appleby

As a break from photography Loz and I headed back to Moon Shadow to explore a couple of possible leads. We were unable to locate the boulder choke near Super Trooper, but did find our way through Criminal Damage. At the limit of previous exploration, I rigged a 35m rope to natural belays and dropped 10m to a ramp floor. The way on to the right ended in a blank wall after around 20m. Just 10m to the left the floor dropped away down a slippery boulder collapse and rounded a corner to reveal an aven 40m tall with water trickling down.

Approximately 15m up in the right wall appeared to be a large open passage, but the limestone to it looked to be fractured and even if possible, it would be a difficult bolt climb. At the base of the wall appeared to be a scalloped passage undercutting back under the boulder collapse. It was impossible to access this without a further handline and I couldn't see if the passage was choked from the collapse or had a continuation.



Figure 13: Tim Allen in Moon Shadow. Photo: Mark Burkey

Peaches and Popcorn

Mark Burkey, Tim Allen, Loz Appleby, Will Yu-Pearson

On 5 January Tim, Will and I headed to the upper entrance of Cobweb Cave, approximately a two hour hike from Camp 5 to the entrance. In the upper Cobweb main chamber we descended to a small opening in the left wall where a 2m climb down through a popcorn rift opens out to a further 3m climb into the cave proper. From here it was around half an hour of mostly walking passage, until the connecting passage to Moon Cave was encountered on the right wall. A similar climb through snagging popcorn calcite gave way to the draughting passage of Moon Cave and a welcome respite to the dry warm caving in Cobweb. A further 45 minutes of caving and photo faffing and we were at our first lead. Opposite an oxbow, just before Windy Corner in Moon Cave, was a window looking into a large void. Tim rigged our 37m rope from natural belays and descended whilst Will and I awaited his return. Tim reported he had entered a large chamber, with a huge flowstone wall and formations. He had managed to descend to the base of this chamber and seen a further window, but more rope would be required to explore further.

Three days later, Will, Loz and I returned with bolting gear and more rope to continue the exploration of Tim's discovery. After a brief pause for lunch, Will again used natural anchors for the approach into the window, then installed a rebelay to drop to the first step of the entrance chamber. A large stalagmite was used to descend the second step and the rope continued down a further step to rebelay into the right wall. From here we had a clear view

Peaches and Popcorn, Moon Cave

Gunung Benerat, Mulu National Park
Surveyed by Loz Appleby, Mark Burkey, Will Yu-Pearson
Drawn in TunnelX by Becka Lawson, April 2024



down through the window to the boulder floor below. The way on was more ramp than pitch and required around 30m of handline to descend. At the base we were in another large chamber with choked alcoves each side of us and continuing passage narrowing ahead. We followed this into a rift passage covered with popcorn calcite and continued to descend until we reached a flowstone-choked aven. A little disappointed, we made our retreat, surveying and derigging as we exited. Back in Moon Cave we discussed what to call the new find and decided upon Peaches and Popcorn, owing to the crunchy dried peaches we had eaten for lunch before descending to discover the prettier popcorn calcite rift.



Figure 14: Loz Appleby, Chris Scaife, Stuart Weston and Becka Lawson on the sloping pitch into Peaches and Popcorn. Photos: Mark Burkey



Figure 15: Becka in Peaches and Popcorn

Corner Cave

Tim Allen, Frank Pearson, Mark Wright, Will Yu-Pearson

Corner Cave was first recorded by the Project during the 2015 expedition. It is located in the south-east corner of Gunung Benarat, up on the cliff face. A position across the valley, on the Gunung Api side, was located from which the entrance was visible and this allowed a co-ordinated team to find a route to the base of the cliff. Attempts to climb up to the entrance failed because of a lack of suitable climbing equipment. However, the entrance was considered to have potential as it lies in a straight line from some considerable cave passages under Gunung Api. Adding fuel to this conviction was the discovery near the base of the cliff, directly below, of a strongly draughting, choked entrance. A sign, it was thought, that something big must lie behind this part of the mountain.

In 2020 more serious attempts were made to climb to the entrance. This followed natural ledges and breaks slightly to the east but all attempts here floundered on loose rock.

On all attempts so far, the only known route to the base of the cliff was via the Melinau River and then directly north up to the top of the screes. Access up the river involved 13 river

crossings and much wading in fast-flowing water. This was a glorious journey in normal conditions but potentially dangerous in flash flood. It was therefore essential to find a dry route to the cave that avoided the river.

During the first days of the 2024 expedition, river levels were high and access via the river was impossible. Several attempts were made by Frank, Mark W and Will to locate a dry route on the north side of the river, but these did not reach the objective. Finally, river levels dropped sufficiently to re-establish the old route and gain the base of the cliff below the desired entrance. Jimmy and Jarah were then employed to locate a



Figure 16: Will Yu-Pearson inside Corner Cave. Photo: Tim Allen

track more directly, avoiding the river. Once this was done it was a walk of just an hour and a half each way to the cliff base.

As Mark W had to return home, I joined 'Team Climb'. All the climbing effort was undertaken by Will and me while Frank supported us, mostly by spotting on the south side of the river.

A ledge was chosen to start the climb on the western side where the rock looked much more stable. I took the first section and over three days we climbed a route up the side of three impressive overhangs. We alternated climbing leads, on occasion fighting through bushes and sharp rock, and always battling with the bugs, heat and humidity. Each day we left a fixed rope to retreat down to our ledge. On the third day, at about 100m up, Frank could see us from the other side and directed us to the east where we were able to traverse 25m to arrive on the upper, overhanging side of the objective. Poised, finally on the brink of discovery, we had run out of rope and retreated in a thunderstorm, off the face and back to camp.

After a rest day we returned with a further 60m rope to continue the assault. Will led and descended the 15m overhanging drop to the bottom of a gully and then climbed up into the cave. At the top were three ways on, all small. Each one quickly pinched out in solid rock and calcite. After all this effort, the jokes came true, it was just a deep alcove.

This objective had taken up a huge amount of time over three expeditions. With track cutting and four days of climbing, over a week on this expedition alone. However, until one looks one never knows and at least we can scratch this objective off the list.

As a footnote, quite literally, the choked cave entrance at the foot of the cliff may well be worth digging. The strength of the outward draught certainly suggests there is some cave behind this end of the Benarat cliffs.

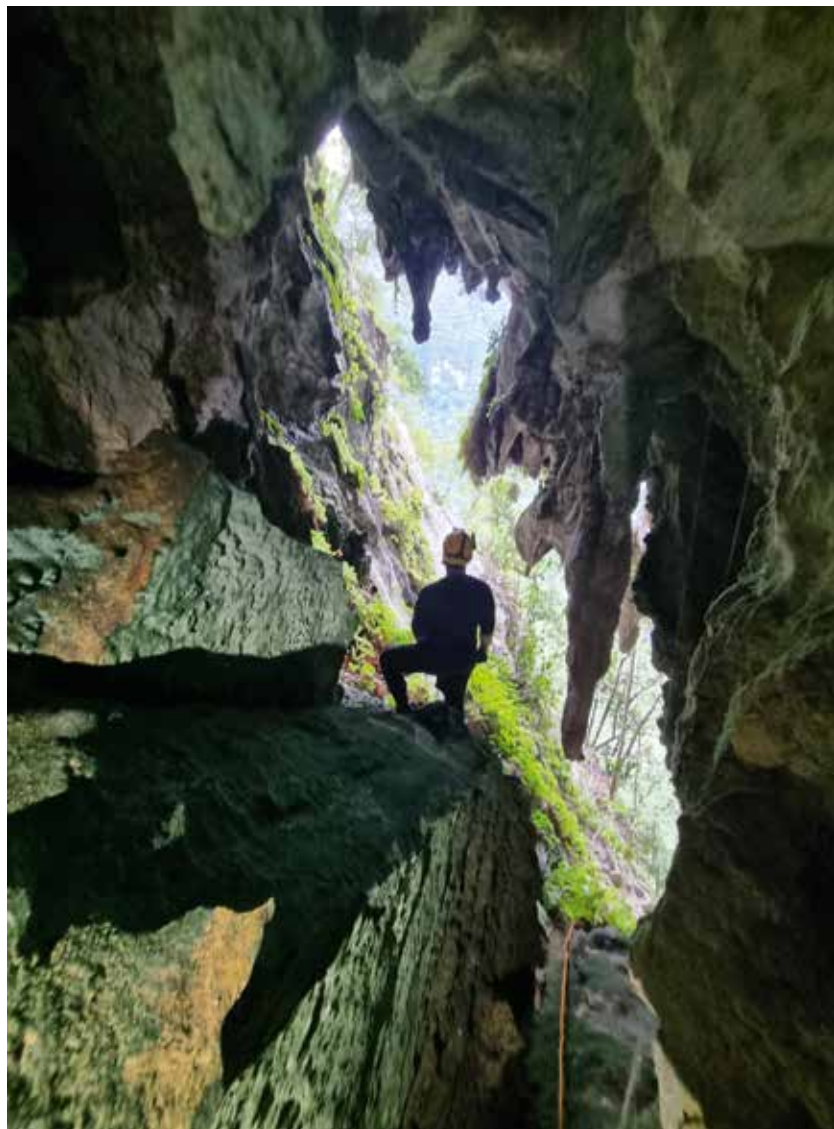


Figure 17: Will Yu-Pearson in Corner Cave. Photo: Tim Allen

Rattan Cave

Chris Scaife, Stuart Weston, Lisa Wootton

This slip rift with a large entrance had been spotted by Becka, Loz, Veno and Jarah on the first walk up to Cobweb's upper entrance and given its name because of the rattan climbing palms surrounding it. On the way back to Camp 5 on 10 January, after our second trip to Serendipity River Passage, we ventured inside to survey. The rift was quite loose and we explored up two branches and down a hole in the floor. There was a strong draught blowing out of the cave.

Rattan Cave

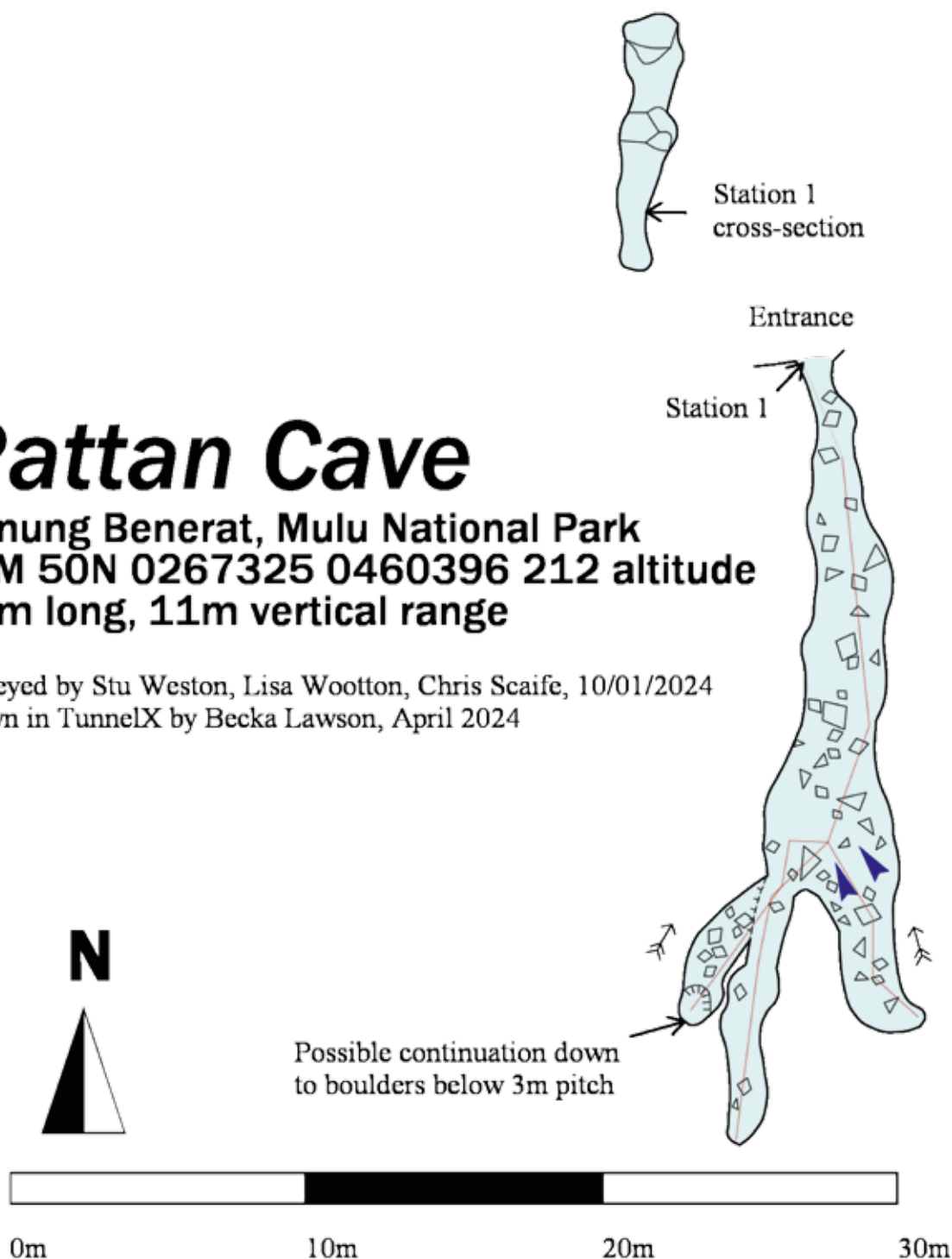
Gunung Benerat, Mulu National Park

UTM 50N 0267325 0460396 212 altitude

50m long, 11m vertical range

Surveyed by Stu Weston, Lisa Wootton, Chris Scaife, 10/01/2024

Drawn in TunnelX by Becka Lawson, April 2024



Genuflection Hole and Woodpecker Cave

Chris Scaife, Becka Lawson

On 18 January, our last day's caving from Camp 5, we went for one last walk in the forest and had a look at the two sites that had been found on 1 January when we were trying to locate the Cobweb Cave entrance. Pete had scampered through them both, but they needed surveying. We had not realised, until their new names had been saved on the survey files, that Pete had already given these two caves names: Red Cairn Cave and New Year Cave, respectively.

Having left several cairns on 1 January to guide us to the entrance, we found Genuflection Hole easily. A short climb of about 1.5m led into some walking passage and a short crawl, where we found Pete's cairn. The cave continued for just a few metres more, in a narrow rift with a faint draught. The total length was 21m, not much for a Mulu cave.

Genuflection Hole

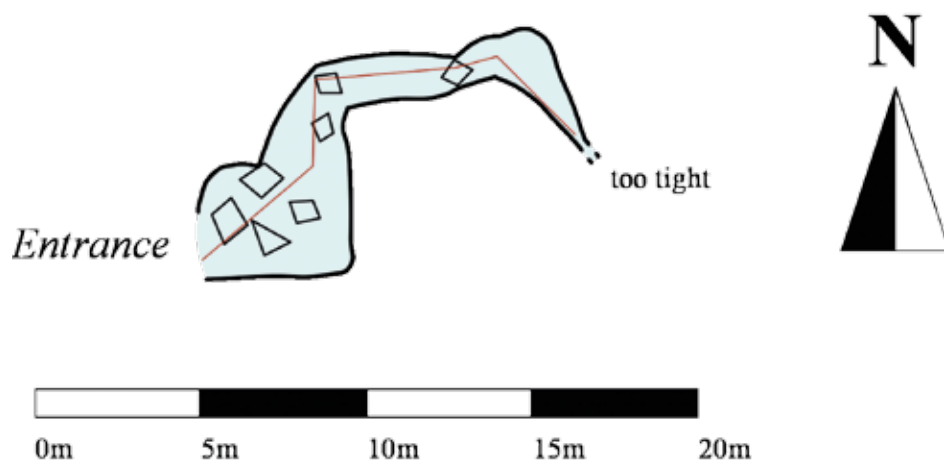
Gunung Benerat, Mulu National Park

UTM 50N 0267152 0460567 135 altitude

18m long, 4m vertical range

Surveyors Chris Scaife, Becka Lawson

Drawn up in TunnelX by Becka Lawson, May 2024

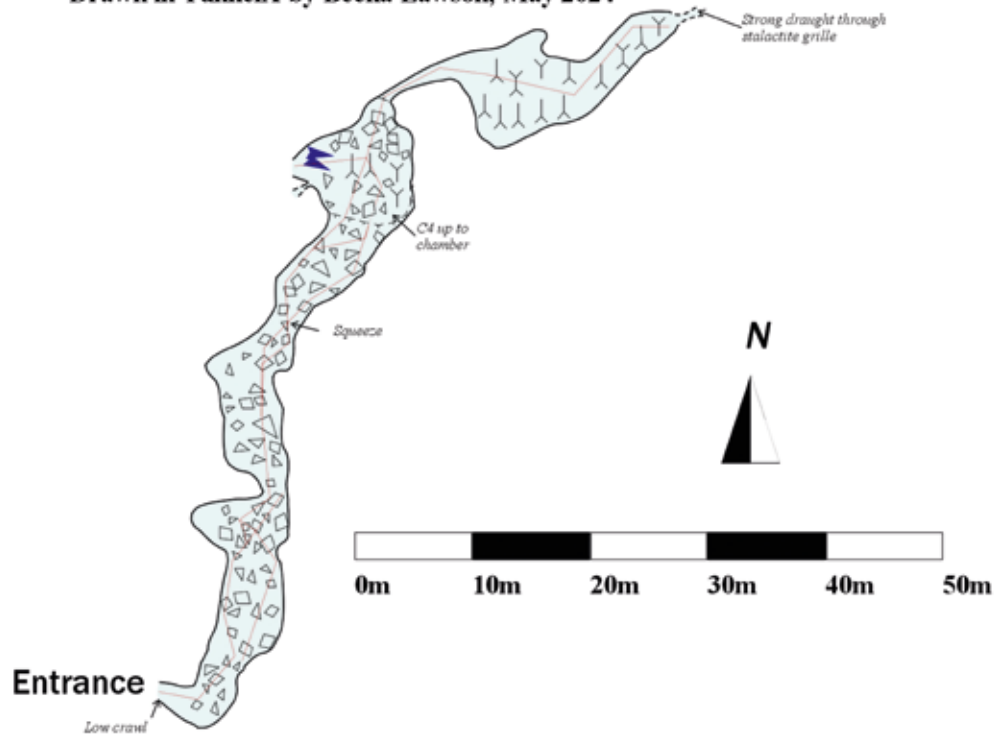


We entered Woodpecker Cave (so named as we saw several woodpeckers near the entrance) through a flat-out, draughting entrance, and emerged into a chamber. Some crawling and climbing led into a fairly large chamber with formations and a big, walk-in entrance. We surveyed every nook and cranny and found the cave to be 161m long. At the north-eastern extremity of the cave, there was a chamber with wonderful formations and a strong draught coming through a stalactite grille. This, according to the survey data, is 34m from known passage in Cobweb Cave.

Woodpecker Cave

Gunung Benerat, Mulu National Park
UTM 50N 0267180 0460589 142 altitude
160m long, 14m vertical range

Surveyed by Chris Scaife, Becka Lawson
Drawn in TunnelX by Becka Lawson, May 2024



Figures 18 and 19: Becka Lawson in Woodpecker Cave. Photos: Chris Scaife

Benarat 2024 Discoveries Log			Totals '24	Total pre-exp	Total post-exp
Cobweb Cave					
	serendipity_downstream_sump.svx	CS/LW	152.59		
	serendipity_river_passage.svx	BL/CS/LW/SW	708.85		
	serendipity_upstream_sump.svx	BL/SW	232.35		
	dutch_rudder.svx	LA/BL/SW	199.85		
	fill_your_boots.svx	BL/CS	268.53		
	hexadecimal_extension.svx	BL/CS/SW	31.55		
		Cobweb Cave Totals	1593.72	32524.05	34117.77
Moon Cave					
	peaches_and_popcorn.svx	LA/WP	167.20		
	criminal_damage.svx	MB/LA	69.00		
	moonshadow_pitch.svx	TA/MB/WP	87.00		
		Moon Cave Totals	323.20	10521.61	10844.81
Rattan Cave					
	rattan_cave.svx	SW/LW/CS	49.88		
		Rattan Cave Totals	49.88	0	49.88
Woodpecker Cave					
	woodpecker_cave.svx	CS/BL	159.69		
		Woodpecker Cave Totals	159.69	0	159.69
Genuflection Hole					
	genuflection_hole.svx	CS/BL	17.55		
		Genuflection Hole Totals	17.55	0	17.55
Corner Cave					
	corner_cave.svx	TA/WP	68.00		
		Corner Cave Totals	68.00	0	68.00
		Expedition Discoveries Total	2212.04		
Resurveying					
	resurvey_to_fill_your_boots (Cobweb)		114.47		
		Expedition Resurveying Total	114.47		
Surface Survey					
	corner_cave.svx	TA/WP	120.00		
	genuflection_hole	CS/BL	3.93		
	woodpecker_cave	CS/BL	1.75		
		Surface Survey Total	125.68		
Statistics					
	Benarat Caverns System Length			53218.38	55135.30

Conclusion and Future Exploration Prospects

Tim Allen

It has become apparent with recent caving expeditions to Gunung Mulu National Park that significant discoveries are becoming harder to find. This also appears to be the case under Gunung Benarat. The Benarat 2024 expedition was privileged to discover a significant section of major river passage, draining the mountain towards the Terikan resurgence. This passage lay some seven hours of caving from the nearest entrance and demonstrates the effort required to gain access to the heart of the mountain. Other leads in the Cobweb high levels led to some beautiful sections of cave, but no significant ongoing length as yet. Finally, after years of speculation, access was gained to Corner Cave after some serious climbing on the Benarat cliffs. Unfortunately, this proved to be just a deep alcove without the major cave development that had been hoped for. A number of smaller caves were discovered around the western foot slopes of the main limestone block. The gap between the Benarat Caverns system and the Terikan River system moved closer, but the sought after connection remains elusive.

The team worked well together despite a number of injuries and ailments reducing the numbers available at any one time. Pete ended up in hospital in Miri having his torn ligament reattached and Mark W had to return home for a family bereavement. The team therefore focused on the leads in the upper Cobweb areas and the Corner Cave climb. A few surface scouting trips took place around the western flanks, but no exploration attempts were made around the northern slopes of Benarat as had been originally planned.

Within this scope, the team was successful in its aims of exploration, discovery, survey and photography. The expedition worked well with National Park management and staff and was pleased to achieve its aims of having a minimal impact on National Park resources. The expedition supported the local population as much as possible through direct employment.

There is still much potential for discovery under Gunung Benarat, but this will require much hard work by a knowledgeable and capable team. There are still a number of side leads in Justamile that need investigating and these are more accessible now that a route to the upper entrance is known. There is potential for a significant higher level to exist above upper Cobweb, which is hinted at by the position of the Tiger caves. The same applies to Moon Cave where there are many signs that a higher level exists. As mentioned previously, the source of the un-named resurgence to the south-west of the Terikan holds potential for new cave. The big mystery of Benarat is what happens to the northern ends of all the major strike passages of Benarat Caverns, Moon Cave and Cobweb Cave. These all end in major chokes, practically on a straight line, with clear potential for significant cave beyond. It is probable, I suggest, that the geomorphology of northern Benarat differs from that of northern Api. This area is little understood, and perhaps when it is, we shall know better the right areas to investigate more closely.

With 106,260m of cave so far surveyed under Gunung Benarat, the potential is certainly there for more.

Appendices

Medical summary

Tim Allen and Lisa Wootton

Prior to our departure, expedition members were advised to speak to their GP to see if they required any vaccinations or medication specifically for the expedition. Emergency details were gathered, which included next of kin contacts, medical conditions, allergies and insurance policy details. The expedition did have a few doctors in attendance, but unfortunately none were of a medical persuasion.

We liaised with medical doctors who had recently been on expedition and took advantage of the first aid stocks present in the Mulu Caves Project store. A larger 'base camp kit' was taken up to Camp 5, along with four smaller kits suitable for underground camps, etc. We had a satellite phone for emergency contact with the outside world and the National Park radio network. All the team were well versed in basic hygiene measures around camps and, wherever possible, precautionary measures were taken against the forest 'nasties' by covering up and applying insect repellents.

Within a few days those first aid kits were called into action as one member slipped and snapped his right quadriceps tendon whilst caving (see p62). This was a serious injury. The leg was immobilised and he was assisted out of the cave, eventually ending up in hospital in Miri, where he underwent knee surgery.

Another member had to return home owing to a family emergency/bereavement and yet another never felt fully fit owing to an existing medical problem (see p56). This reduced the team effectiveness by three members right from the start of our field work.

Other problems amongst the team included:

- An injury to the knee, from a sharp spike of limestone next to the track, which took some time to heal.
- A twisted knee.
- A twisted ankle.
- A case of Mulu foot.
- An undiagnosed rash around the neck and torso.
- Grazing from slips and trips.
- Infected bites.
- Chafing around the groin area.
- Blisters from swollen, hot feet.

None of these ailments prevented the team members concerned from expedition activity for more than a day or so. All were treated as effectively as possible given the limits of living at Camp 5, travelling in the forest and caving.

Figure 20: Will Yu-Pearson and Mark Wright attend to Pete Hall after he injured his knee underground
Photo: Tim Allen



Another serious condition occurred post-expedition. Two weeks after returning home, one member was admitted to hospital with a leptospirosis infection and complications. This person also tested positive for Chikungunya disease, which has not been apparent on any other Mulu expedition to our knowledge. The recovery has been long and hard and is detailed in a personal account on p53.

Chikungunya - Key facts – World Health Organisation.

- Chikungunya is a disease transmitted to humans by mosquitoes in Africa, Asia and the Americas; sporadic outbreaks have been reported in other regions.
- Dengue and Zika have similar symptoms to chikungunya, making chikungunya easy to misdiagnose.
- Chikungunya causes fever and severe joint pain, which is often debilitating and varies in duration; other symptoms include joint swelling, muscle pain, headache, nausea, fatigue and rash.
- There is currently no approved vaccine or specific treatment for chikungunya virus infections.
- Owing to the challenges in reporting and diagnosis, the number of people affected by chikungunya is underestimated.
- Severe symptoms and deaths from chikungunya are rare and usually related to other coexisting health problems.

Overview

Chikungunya is a mosquito-borne viral disease caused by the chikungunya virus (CHIKV), an RNA virus in the alphavirus genus of the family Togaviridae. The name chikungunya derives from a word in the Kimakonde language, meaning 'to become contorted'.

Mulu Caves Project store

Tim Allen

The Mulu Caves Project maintains a caving equipment store in the Research Centre at Park Headquarters.

Benarat 2024 cavers were pleased to receive an updated inventory from the November expedition just before departure. For the most part there is enough equipment to run an expedition, but we took the opportunity to top up some gear, notably we added 568m of 9mm SRT rope. We brought and used our own anchor fixings and the store was left, on our departure, only a few hangers and karabiners short of previous stock.

We did note that the storeroom was rather full. We removed all the leftover food and suggest that none is left in the store in future as it will quickly attract rodents. We also removed some items of old clothing and footwear.

We would recommend that space is freed up by removing and selling on the huge number of photographic flashbulbs that take up so much space. More space could also be freed if a thorough sort out of other equipment took place. Much 'non-essential stuff' looked like it would never be used again.

As we were to be based at Camp 5, we bought a new generator and freezer. Those from 2020 were no longer fit for use. Owing to the lack of space these were left in storage with Veno but it would have been better to have been able to leave them in the storeroom.

There were many short rope lengths, off cuts, in the store. Not many of these are likely ever to be used, so about 20 lengths (180m) were given away to local boatmen, etc. The rope in the store still exceeds 1km.

There were eleven Petzl Transporter sacks in the store and these were all used to transport equipment up to Camp 5 and for some limited work underground. Over the course of the expedition, six of the shoulder straps broke where they joined into the lower back pad. This is a clear weakness, known (apparently) to Petzl. They were all patched together in the field and are not fit for use. Those who purchased them might request a refund, but certainly no further transporters of that type should be bought again.

Two new laptops were purchased in the UK prior to the expedition. One was used for survey and one for photography and admin. They replaced a previous pair that had become too dated. They were brought back to the UK for the next expedition to use.

At the end of the expedition, the inventory was updated with an addendum and sent around to the Mulu Caves Project and likely future users. The original spreadsheet inventory is becoming cumbersome to use and a fresh start should be considered once a clear out has been undertaken.



Figures 21 and 22: Frank Pearson and Mark Wright at Park HQ with the bags ready to go; the porters ready to leave for Camp 5. Photos: Mark Burkey



Finance report

Frank Pearson

The expedition benefited from a grant of £4,500 from the Ghar Parau Foundation and £5,000 from the Mount Everest Foundation. Each member of the expedition contributed £270, totalling £2,970. This sum was paid in ringgits (RM1500, total: RM16,500). The income for the expedition totalled £12,470.

Each team member booked their own flights from the UK to Mulu via different routes and their own accommodation prior to Mulu. The costs of flights per person varied between £1,200 and £1,800. Each team member also paid for their own insurance, either through the BCA (P J Haymans) scheme or Snowcard Insurance. Each member brought their own personal caving and camping equipment, helped, if necessary, by Mark Wright's generous equipment discount. Each member also bought one or two expedition t-shirts.

Before the expedition left for Mulu, RM5000 (£920.76) was sent in advance to Venno Enar, the expedition's local organiser in Miri / Mulu. This covered the cost of advance purchase of a new generator and fridge for use at Camp 5, together with wages for local reconnaissance of the Cobweb entrances. RM24,000 was bought at a cost of £4,279.44. Combining this quantity with expedition members' contributions, the total amount of ringgits, cash, in the field at the start of the expedition was RM40,500. That left £4,138.88 in the expedition account for use with the credit card.

The expenditure on the first day in Miri was RM8,340, spent on taxis and on food and equipment needed at Camp 5. Ferrying by boat and portering all the equipment up to Camp 5 cost RM11,811. To ferry and porter the equipment back to Park Headquarters and pay for the camp manager and his assistant was RM7,588. Venno's wages were RM4,250. The total expenditure for this part of the expedition was RM31,989.

For the few days we spent at Park Headquarters at either end of the expedition, food was provided by Cafe Mulu at the expense of RM3,355. Park accommodation, both at Camp 5 and at Park Headquarters, totalled RM9,300. The total expenditure for this part of the expedition was RM12,655.

The expedition total field expense from the advance to Venno, through all costs of food, accommodation, porters, boats, cooks, organisers and incidental expenses was RM50,000. Converted to sterling by way of fluctuating exchange rates, this will be in the region of £10,000.

There were additional purchase costs in the UK including some group equipment, printing and distribution of the final report, etc. When added to the personal spending on flights and insurance this amounted to around £22,000. This brings the total expedition cost to £32,000, exactly in line with pre expedition budgeting.



Figures 23 and 24: Frank Pearson taking photographs and with the ice cream that was somehow transported to Camp 5, still frozen, for his birthday. Photos: Mark Burkey



Photography

Mark Burkey

All my photography on this year's expedition was shot on the Nikon Z7 with the Z14 -30mm lens. Strobe lighting was from five AD200s and one AD400. All images were shot in RAW format and processed in Adobe Lightroom whilst at Camp 5. Other expedition members were encouraged to use mobile phone cameras to record the expedition, both in still frame and video. This ensures so much more of the expedition is recorded and the results from many phones is surprisingly good.

Having learnt lessons from previous expeditions, I split camera gear into various drums so as to enable others to help carry to and from the cave. This was distilled into a single Peli case whilst doing the photography itself to enable the kit to be accessed efficiently and this worked well.

Additional kit that I have found helpful during expedition: silica gel to keep kit dried out in the drums and boxes; laser pointer; walkie-talkies; black gaffer tape to hide reflective parts of clothing; string to create lanyards for strobes when doing pitch shots; spares of memory cards, card readers and radio transmitters, all of which have failed at some point during expeditions in the past.

2 January, Photography Day 1

This was in Cobweb Cave's lower passages en route to the streamway, with Tim, Chris, Pete, Stuart and Lisa. The plan was to take some photos of the white limestone passages on the approach to the streamway and then take shots of the streamway itself. As well as taking a number of photos of the passage formations, a few shots were taken for Chris to use for a review of the Petzl Duo RL headlamp (published in Descent 296). Unfortunately, after a slip, Pete damaged his leg and all efforts from that point were on safely escorting him out of the cave and back to Camp 5, so no photographs of the streamway itself were taken.



Figure 25: Lisa Wootton, Stuart Weston and Chris Scaife in Cobweb Cave. Photos: Mark Burkey



Figure 26: Stuart Weston in Cobweb Cave

5 January, Photography Day 2

Using the upper Cobweb entrance, Tim, Will and I headed through to Moon Cave for Tim and Will to explore a few leads. Photos were taken of the Moon Shadow passages during this trip.



Figure 27: Tim Allen in Moon Shadow

8 January, Photography Day 3

Will, Loz and I headed back through Moon Cave to push the Peaches and Popcorn lead. Will rigged and bolted his way down, with Loz following and then me bringing up the rear. Once all leads had been pushed, we surveyed and took photographs as we exited the cave. Owing to the arduous nature of the walk in and out to the cave, I had decided to leave the camera kit at the entrance and only return the batteries for charging and XQD memory card back to the camp each day. Unfortunately, the memory card was damaged on this occasion and all photographs from that day were lost.

12 January, Photography Day 4

With a large team of Loz, Becka, Chris, Stuart and Lisa, we headed back to Peaches and Popcorn. I rigged and, with the assistance of everyone, re-photographed our earlier find, this time successfully returning to camp with the memory card intact!



Figure 28: Loz Appleby in Peaches and Popcorn. Photos: Mark Burkey



Figures 29 and 30: Loz Appleby and Stuart Weston; Loz and Becka Lawson in Peaches and Popcorn



16 January, Photography Day 5

Tim, Chris, Will and I headed in to photograph the Serendipity River Passage, which the team had discovered earlier in the expedition. After five hours of caving through a mixture of walking passage, boulder chokes and pitches, we arrived at our destination. I damaged my leg on the inward journey and this would slow me down considerably on exit. Becoming more tired as I favoured my left leg I lost my footing often and was exhausted by the time we exited. We did however have a successful photo trip and managed to document the river passage itself (see separate report by Tim Allen on p68).

Surveying and data management

Becka Lawson

A series of issues arose around surveying and data storage from our trip. This meant that we probably had to put in more effort than most expeditions to do what we needed, but everything was eventually resolved.

The first problem that we encountered was rounding up sufficient instruments to take underground measurements. Both of my DistoX2s had died in 2023 and there was a heavy attrition rate of DistoX2s during the November Mulu 2023 trip, which left only one useable instrument for us to have. However, Chris had a personal DistoX2 and Pete managed to borrow the new Red Rose DistoX2 in exchange for his first born if he failed to return it intact. In addition, at the last minute I bought an SAP6 (Shetland Attack Pony) from Phil Underwood. This only works with SexyTopo but otherwise can largely emulate a DistoX2, so it will Bluetooth to a phone, store data and measure compass readings, inclination and distances. Finally, Tim took a set of traditional instruments and notepaper in case all the electronics failed. Once in the field, Chris's DistoX2 appeared to develop a terminal fault whilst we were calibrating it, but the SAP6 and the Mulu DistoX2 worked fine so we used them and kept the Red Rose DistoX2 tucked away unused in a safe place such that no offspring had to be sacrificed.

In autumn 2023, Pete Hall bought two identical Windows laptops to replace the existing Mulu expedition laptops. He put some software on both of them: Office (although this only seemed to work offline on one of them), Survex, Notepad, Notepad++, Inkscape, Java and Tunnel. Both laptops also have copies of all the information from previous expeditions that was on the Mulu website. This was useful as we could browse old reports and logbooks if we did not have the hard copies with us. We used one laptop to save and edit photos and the other for storing survey data. We had forgotten to take mice for the laptops, which was a nuisance and needs fixing for the next trip.

After the usual fun and games calibrating our instruments, we did some training at Camp 5 on paperless surveying using SexyTopo running on Android phones. Even newbie surveyors picked this up quickly and subsequently some good underground surveys were drawn up by first-timers, which I was really pleased by. After every survey trip I'd have liked to have printed out the centreline from the Survex files and to then have the surveyors draw up a final plan and elevation on that. Unfortunately, after several hours I gave up on the printer, having wasted half a ream of paper and tried different printer cartridges including the brand new one that we'd bought in Miri. The printer just smeared ink over the paper, so the centreline wasn't visible. I repeatedly cleaned the rollers, shook the cartridges and tried every other suggestion offered, all to no avail. This left the only other option that I could think of, which was to have surveyors tidy up and improved their SexyTopo underground drawings to make neat, final versions. We managed to do this but it was a fairly slow and tedious task. The next expedition will need to decide whether they think they can get the printer working or if a new one needs to be bought.

Back in the UK I used the neat, final SexyTopo plan drawings to produce surveys for the expedition report. I drew these up in TunnelX, the free, open-source software that my partner, Julian, has written. Stu scanned in the logbook and then he and I shared typing it up to

produce a digital version of the logbook. Finally, after help from Tim, Matt Kirby and Nick Williams, I got access to the Mulu archive sorted and I uploaded our photos, survey data, survey drawings, logbook and so on to it.



Above: Figure 31: Solar panels at Camp 5
Photo: Chris Scaife

Below: Figure 32: Pete Hall and Becka Lawson working on survey equipment at Camp 5. Photo: Tim Allen

The Caves of Benarat after the January 2024 expedition

English Name	Malay Name	RGS '78	Mulu '80	S'wak '84	Buda '97	DWG '97	Buda '00	B'rat '00
Gunung Benarat Caves								
Moon Cave	<i>Gua Bulan</i>							
Benarat Caverns	<i>Lubang Benarat</i>	1355.00	4870.00	2095.00				
Hurricane Hole	<i>Lubang Taufan</i>							372.00
Cobweb Cave	<i>Lubang Sarang Laba-Laba</i>			15185.00				10747.00
Sakai's Cave	<i>Lubang Sakai</i>		1120.00	1525.00				
Tiger Cave	<i>Gua Harimau</i>			3800.00				
David's Cave	<i>Lubang Daud</i>			439.00				
Deception Cave	<i>Lubang Tipu</i>			1510.00				
Menagerie Cave	<i>Lubang Kumpulan Binatang</i>			1875.00				
Terikan Rising Cave	<i>Gua Sungai Terikan</i>	775.00						
Terikan River Cave West	<i>Gua Sungai Terikan Barat</i>	2270.00						
Terikan River Cave East	<i>Gua Sungai Terikan Timor</i>	3840.00						
Blue Moonlight Bay Cave	<i>Gua Teluk Cahaya Bulan Yang</i>		9400.00					
Deliverance Cave*	<i>Gua Pembebasan</i>				3617.67		739.97	
Gawai Cave*	<i>Gua Gawai</i>			300.00		1775.00		
Buda Overlook Cave	-						20.50	
Hole of the Moon	-							
Paradise	-							
Gardener's World	-							
Little Deliverance	-							
Half Moon Penguin Cave	-							
Troll Canals Rising	-							
Woodpecker Cave								
Genuflection Cave								
Corner Cave								
Rattan Cave								

B'rat '03	B'rat '05	Mulu '07	Mulu '09	Mulu '11	Mulu '13	Mulu '19/2	Mulu '20	Benarat '24	Total Lengths
	6635.00	3787.77					98.84	323.20	10,844.81
									8,320.00
1106.00			102.30			272.42			1,852.72
4414.00							2178.05	1593.72	34,117.77
							187.41		2,832.41
									3,800.00
349.00									788.00
									1,510.00
									1,875.00
12532.00									13,307.00
	20.00								2,290.00
	40.00								3,880.00
257.00	53.00								9,710.00
					596.37				4,954.01
									2,075.00
									20.50
			2553.00						2,553.00
				1192.87					1,192.87
					33.75				33.75
					7.40				7.40
					0.00				0.00
									0.00
								159.69	159.69
								17.55	17.55
								68.00	68.00
								49.88	49.88

55,135.30
Benarat Caverns
system total

32,572.00
Terikan
system total

106,259.36
Gunung Benarat total

Wildlife

Chris Scaife

In a jungle camp, deep within a national park in South East Asia, you can expect to see some exciting flora and fauna. The wildlife spectacle for which Mulu is internationally renowned is the bat exodus from Deer Cave and this was something most of us witnessed on our jetlagged first evening at Park HQ. Some of us also visited the viewpoint outside Deer Cave on our last evening in Mulu. For roughly half an hour, around sunset, we watched the sky as millions of bats of several different species left the enormous cave entrance in a near-constant stream of swirling activity. Doughnuts formed as small groups spun upwards, and Bat Hawks dived in to catch their prey.



Figure 33: Bat exodus from Deer Cave. Photos: Chris Scaife

We also frequently saw bats as we walked through the forest at night. Bats were present inside the caves, but encountered less often than the ever-present swiftlets, which were loud and use their echolocation to travel far underground. Other wildlife we saw inside the caves included geckos, crickets, spiders, centipedes, crabs and the Cave Racer snake. Other than occasional dive-bombing swiftlets, there were no problems encountered with the wildlife. They seem to be more scared of us than we are of them.



Figures 34, 35 and 36: Cave spider, centipede and crab, all of which were frequently seen underground

At Camp 5, we were often treated to views of butterflies, moths and dragonflies. There was also a moment of magic as a small group of us sitting outside the camp late one afternoon watched a Bornean endemic Mountain Serpent Eagle circling high up on Gunung Benarat, then swooping down and flying low over our heads. Perhaps the most spectacular of the insects was the Rajah Brooke's Birdwing butterfly, a huge thing with electric green markings on its wings. The award for insect encounter of the expedition, however, probably goes to Pete Hall, who befriended a Tropical Swallowtail moth as he walked back from Deer Cave on our first night in Mulu. It held on to him for the entirety of the walk to park headquarters.



Figures 37, 38 and 39: Pete Hall with the Tropical Swallowtail moth (by Mark Burkey), Rajah Brooke's birdwing and Red Percher dragonfly

Mammal sightings, other than the bat exodus, tended to be fleeting. We all saw rats from time to time and some of us caught glimpses of larger mammals, including civets and monkeys. Those of us who walked up to see the Mulu Pinnacles were treated to a close encounter with a Mountain Treeshrew.



Figure 40: Mountain Treeshrew near the Pinnacles. Photos: Chris Scaife

The plants that really stood out were the orchids, which were thinly spread throughout the national park, and carnivorous *Nepenthes* pitcher plants, found on the Pinnacles Walk and the Kerangas Trail. Once the first person had spotted a *Nepenthes* on the Kerangas Trail, seeing them became a badge of honour and some expedition members went to extreme lengths to manage just the briefest of glimpses. Clearly, this was an expedition focused on cave exploration, but the wildlife certainly enriched our experience.



Figures 41, 42 and 43: *Plocoglottis plicata* orchid, *Nepenthes faizaliana* and *Nepenthes bicalcarata*

Leptospirosis: a personal account

Lisa Wootton

Arriving back at Manchester airport on Monday morning, slightly later than planned, we said our goodbyes before completing the final leg of our journey home – or in Stuart's case, to work. I dumped all my bags in the garage in the hope that any unwanted non-native passengers wouldn't survive the cold. When I started to unpack, my fear was confirmed when I found what looked to be a small cockroach – which I dealt with before it could make itself comfortable.

By the end of the week I'd done most of my washing and I no longer felt jetlagged, just tired, so I started getting back into my normal routine. By Thursday evening of the second week after returning I was starting to feel unwell. At first, I put the illness down to the inevitable post-long-haul flight cold and flu germs or even covid. On Friday I could feel the illness starting to take hold and felt progressively worse as the day went on. Thinking I could shake it off with some rest and a late afternoon snooze I went to bed, not knowing that's where I would stay for the next three or four weeks.

Friday night was when the sickness started, which from past experience of being ill, usually only lasts 12-24 hours at the most. But on this occasion it continued into the weekend. I also developed a temperature, hot and cold sweats, strange dreams and the worst joint and muscle pain I have ever experienced with any illness. The pain seemed to concentrate itself in the joints, which were still sore and recovering from three weeks of caving. I tried to go downstairs on occasion, thinking I might feel better, but I soon retreated to bed to be closer to the bathroom. I could walk but I couldn't stand up straight because of the pain in my joints, back and stomach. I'd lost my voice, and the headache and light sensitivity was only adding to the nausea, so I lay in bed as still as possible hoping I could sleep and it would pass. It didn't.

By Sunday afternoon I knew something wasn't right, so we sought advice from 111 and I was put through to the out of hours doctor at my local surgery who assured me the symptoms were that of flu or a potential new strain of covid. I stressed the point that I'd recently returned from Borneo and the symptoms I was experiencing were ten times worse than anything I'd experienced in the past (doctors must hear that a lot), but the advice remained the same and to leave it 48 hours for the illness to pass, or call back if the symptoms persisted. Having recently been vaccinated for covid and flu, I thought surely I shouldn't be feeling this bad, but I left it another 48 hours.

The 48 hours passed but the symptoms I was experiencing hadn't and I was on the fifth day of not keeping anything down. Too ill to go to A&E, I managed to get a doctor's appointment via 111 on Wednesday. Attending the appointment I felt truly dreadful, but my temperature and blood pressure were normal. As a precaution, the doctor took a blood sample and called the Infectious Diseases ward at Hallamshire Hospital, which had a bed becoming available that afternoon. Later that afternoon I received the call, and I was taken to hospital.

In the lift on the way up to floor E, the bright lights were flashing in tune with the pressure pulse in my head. I was placed in a single room and sat on the bed but because of nausea, headache and light sensitivity I could barely lift my head to see who was talking to me. A lot of doctors and nurses came and went, asking me a lot of questions. The less experienced

phlebotomists soon sent for their more experienced colleagues as I was so badly dehydrated that they were struggling to find veins to take blood and insert a cannula.

Because I felt my recent stay in Borneo hadn't been taken seriously, I took the 2020 expedition report with me to hospital to stress that my trip into the jungle wasn't just a tourist day excursion and that we had actually lived in and been caving in the area for three weeks. The report stayed in the staff room and came back a few days later when I was asked all the usual questions about caving we all know and love!

The consultants had their suspicions about what might be causing my illness and straight away started me on intravenous fluids and antibiotics. Later that evening the consultant returned. I struggled to process and understand what he was telling me, but I do remember summarising his explanation into three bullet points:

- I'm severely dehydrated.
- I have severe stage 3 kidney failure which they hope to reverse.
- Caused by an underlying infection they need to get under control.

The consultants suspected I'd caught leptospirosis and blood tests would provide confirmation in a few days to a week. I was told not to worry about how I'd caught it but that didn't stop me from listing all the possible mechanisms of transfer I had encountered recently, not just in Borneo, but also closer to home when open water swimming, caving, paddleboarding, or even



Figure 44: Lisa Wootton in hospital with leptospirosis, back in the UK. Photo: Lisa Wootton

in my own garden when I dealt with a badly injured rat that was eating easy food under the bird table.

To bring my kidney function back down to normal levels I had to take on a lot of fluid, both IV and orally, having every input and output monitored. In the single room there was a TV on the wall at the end of the bed but no remote. The nurses offered to switch it on as I felt too ill to do it myself, but I couldn't face the light and noise, so I lay unable to snooze, read, watch TV or use my phone. The time passed surprisingly quickly and at no point did I feel bored or restless or feel the need to plan my escape.

I felt truly dreadful, but I was still walking and talking even though I'd lost my voice; the whites of my eyes and skin weren't yellow because of the kidney failure and I hadn't fainted or collapsed. Blood pH and salts were still within the normal range; my observations, blood pressure and temperature were all normal and they continued to be normal for my entire 10-day stay in hospital, so I was struggling to understand just how ill I was. As the days passed I started to ask the question, but the consultants couldn't give me a straight answer. I was finally able to quantify my illness when I was told that if my kidney function had continued to deteriorate, I was 24-48 hours away from needing dialysis as my kidney creatinine had reached almost 600, when my baseline is 60-70. I later also found out that my liver C reactive protein had reached 144 when it's normally below 1.

But why were my blood pH, salts and observations all still within the normal range? The consultant explained this was likely because I was otherwise healthy and strong, but stressed my organs were only just maintaining a normal state, they were beginning to fail and wouldn't have been able to maintain normal levels for much longer.

On day four, I was moved to a small ward with three ladies within the same department, which made life a little more interesting but annoying at times. On the seventh and final evening of IV antibiotics there was talk of sending me home, but I was still being sick and didn't feel ready to leave hospital. Plus I wasn't bored, climbing the walls or planning my escape. As day nine progressed, one lady in particular was really starting to get on my nerves, I'd become more restless and I wanted a good night's sleep so by day ten I was glad to be leaving hospital for my own bed.

Recovery since leaving hospital has been slow yet gradual, with the invisible barrier of post-infection fatigue being the final hurdle to cross. The duration of activity I can undertake has increased slowly, which swimming has shown in terms of time and distance. The consultant wrote: "her enthusiasm is positive, but she may have to manage her expectations about the speed of recovery from an episode of severe infection and try to increase activities at a slower pace." It soon became clear that I'd set my expectations too high when I struggled to swim 20 lengths. This soon increased to 40, then 60, but I'm still a very long way off swimming 10km.

The Gates of Carbon: a Melinau Meditation

Frank Pearson

*'Time held me green and dying
Though I sang in my chains like the sea.'*
(Dylan Thomas: Fern Hill)

On the fourth day of a climb that was at least nine years in the making, Will and Tim abseiled into the mighty crescent-shaped cleft high on the great golden prow of the Benarat cliffs on the eastern edge of the Melinau Gorge. This prominent cleft has been the location of the long sought-for Corner Cave, visible above the forest canopy from the opposite side of the gorge. A cave in this recrystallised section of the limestone would be a rare one, a remarkable one. Some distance below the cleft on the same joint is a draughting slot, too narrow to enter; on a still day the leaves and branches of the trees growing there can be seen to sway and quiver. Glimpses give the appearance of space beyond the cleft, though what Will and Tim found there after 5m was a complete calcite choke. The gate to the world of palpable darkness was firmly precipitated shut.

Such a termination is a disappointment, a disenchantment even! However, what remained in the mind's eye was the vast ridge that was Gunung Benarat, an immense limestone mountain formed from carbon on the floor of a long-lost ocean. Apart from the great cliffs in the gorge, it was covered in rainforest carbon too, and observed by caver's carbon. Carbon is everywhere here in Mulu. When we look beyond Benarat with a more cosmic perspective, we can see that carbon is the fourth most common element in the universe and its atom is able to make chemical bonds with many other elements, which ensures this element's ubiquitous nature here on earth and elsewhere. Where would we be without it! That the limestone is made of carbon and that the carbonic acid rain that falls upon it hollows out the mountain to form caves, then that the same rainwater fills the caves in, is at the heart of how we search for caves and, more often than not, why we are frustrated when our hopes end up as a sphincter-tight gap or a completely sealed boundary. Even when not frustrated, our movements in a cave flow through the midst of these phenomena. Hang around in the dripping water long enough and we cavers will be calcified too. Our fellow mammal, the civet, has left many skeletal traces in the speleothems of Mulu.

As with so much Protean shape shifting, the carbon transformation comes through stage after stage of shifts in temperature and pressure. As we know, the rainwater in the daily downpours picks up more carbon as it falls from the atmosphere and through the tree canopy and as it dribbles through the leaf litter and soil at the top of the cliff, and yet more as it percolates through the porous rock. A porous rock shaped from a rain and drifting mist of existence, of broken gastropods, unhinged ostracods and bivalves, disintegrated corals, and downpours of plankton on to the thickening oozy floors of seas, an oceanic trace somewhere between mortality and memory. And as we know further, the rock is shaped by heat and the crushing pressure of continents, uplifted, leaving a micrite permeability and a precipitous percolation of carbonic water. As the water breaks free from the roof of the cave, it is another temperature and pressure change that acts as a catalyst for a chemical change that precipitates calcium carbonate in solution as calcite. The drip of time ticks a monument to sparkling beauty in the dark space of the mountain.

These thoughts were in my mind as I gazed across the gorge from the opposite bank, through a narrow gap in the trees. With my binoculars I could see Tim and Will as they bolt-climbed out of the vegetation on to the exposed bright limestone of the cliff. Our radios crackled with information as I watched their slow progress to the cleft. The sight was impressive from my vantage, although their view was greater by far as they saw the vast catchment of the Melinau River below Gunung Mulu, behind Benarat and Api, along through the gorge and out on to its flood plains all the way to the South China Sea, an immense gathering and drainage for this spectacular river system. And just below them, their mark, was a small, and now probably dry, fossil stream passage, unseen and unknowable.

I could make out the tangle of vertical forest below the cleft where I had hung back in 2020 on an attempted climb with David Rose and Rachel Findlay. We were close, I could make out the upper lip of the cleft, yet progress up the shattered vegetated cliff above was beyond me, the plants and saplings were prising open the limestone. I didn't want to be part of a rock fall. We finally descended just ahead of the daily deluge. This wasn't my first attempt on this climb, I'd tried back in 2015 with Hugh St Lawrence when a rockfall from below our 2020 highpoint brought that climb to an end. I'd chosen to hang from a belay on a large tree rather than lean back against it. The rocks smashed down the pitch and bounced and ricocheted off the large trunk, luckily not cutting the sling I hung from. Trees can be an aid as well as an obstacle. Now among this dense stand of trees, peering through them, I was observing the climb rather than participating in it as my own skeletal remains forbid it. Temperature and pressure can change everything.

The climbs we made were wild paths indeed, though the paths to the foot of the climb or to my lookout, through the forest and by way of the river, aware of the passing of the Panan, were more like bird-paths: faint and lightly trodden, skirting ridges, shadowing contours, rounding tree-fall, sensing rock structures, and wading the currents of the river. And the breathing forest you pass through humid transitions from the alluvial plain mixed dipterocarp forest with the massive, buttressed trees, and their weighty epiphytes, through the scree slope forest and then on to the seemingly impossible cliff communities that thrive on rain, mist, and whose roots search crevices for percolating water. Birds come, circle, and go. Other creatures see, hear, or smell you and make scarce. Still, you sense you are being watched though you easily fade from view as you walk the forest floor, wrapped in close leaves and branches, lost in chloro-luminosity, this equatorial green light.

After hearing on the radio that Corner Cave was in fact an alcove, with the possible entrance completely sealed with precipitated calcite, I wandered back through the forest, all my thoughts perhaps guided by myriad forms of carbon! With caving in mind, my expedition had been a total disaster, although on my walk I thought long about the faint promise of a cave beyond the gates of carbon. This was strangely uplifting. My own failing heartbeat of time, utterly inconsequential in geological time and a mere brush against a leaf in forest time, had given me a glimpse or an appearance of the cosmic enormity of the unknown – no small thing! The undisturbed darkness beyond the gates may well be an undeveloped image of my own imagination, would you believe? A darkness from which comes unfamiliarity, uncertainty, a sense of the uncanny that, no matter how hard I try, I will never know how to see. Yet, no matter, I was drawn to take a look. Bewildered and elated, stumbling over roots, I follow the bird-paths back home.

Route from the upper Cobweb entrance to Serendipity River Passage

Becka Lawson, Lisa Wootton

The large, obvious upper entrance to Cobweb Cave heads south-west to LED the Way and the Moon Cave connection. Instead, climb up the boulders on the left to access the second entrance heading north-east. There is a good campsite, Swift Retreat, just beyond the final daylight opening (the area just inside the main upper entrance becomes swift hell at night). Water for camping can be gathered by placing a bucket on a boulder in the middle of the third entrance. Beyond the camp, 40m after the final opening, a greasy, crumbling traverse on the left wall is best protected with a max 20m handline belayed off boulders.

A short section of large passage leads to a large choke with possible snake polish on the rocks. A strong draught from a small hole on the right wall leads to a painful, short squeeze. Once through the squeeze, keeping right you climb down, duck under a big block and re-emerge in large passage. Continue along the right wall for five minutes to an obvious inlet (good drinking water emitting at its base) with a 2m diameter phreatic tube above. It is an easy climb into the tube and this leads to a series of smaller passages, Fill Your Boots. This was surveyed in 2024, with many white crabs found in the gloopy mud pool. Back at the inlet, continue along the large main passage for some distance until you reach a junction with a prominent cairn at the base. This cairn marks where the climb up from the Monolith Passage (accessed from the lower Cobweb entrance) broke into Justamile and the team surveyed hundreds of metres to the north-east, leaving cairns, without realising they were in known passage.

From the cairn, climb up on the right through stalagmites and popcorn to a short oxbow that leads to the base of a huge, daylight aven (from the cairn, the obvious passage across the chamber to the left can be accessed by a traverse around the right side of the pit, and this also leads to the daylight aven via a short, awkward climb through calcite and boulders). In the daylight chamber there is a huge stalagmite boss below the aven. Walk around this on the right, staying fairly high and avoiding the low crawling, dead-end passage on the right. This passage leads to the second choke which is stooping height, roomy and straightforwardly passed on the left.

The choke emerges into large passage that continues past a narrowing and on until an obvious junction in smaller passage is reached with a boulder in the middle. Take note of this for the return. There are passages off to the right from here but the way on is to the left. *Going right, a second junction is soon reached. Left leads <100m to the top of a ~10m deep pitch with a possible continuation that takes water. Right at the second junction leads to a round, phreatic passage with a fine roof that starts dropping steeply and appears to end in a mud choke.* More large passage leads to an awkward crumbling traverse and climb down on the left wall. This can be protected with a max 20m handline with so-so naturals. Soon after there is a second, easier free climb down popcorn. After more large passage, a large passage enters from the right – again note this for the return. *This passage leads to a large, muddy ramp area. From here a passage leads off left and eventually rejoins the main passage on the right wall >100m beyond. Ahead, there is also a large passage leading off, starting either side of a huge pillar and there is possibly a third passage on the right taking water.*

The large passage continues slogging up and down boulder piles. A moderate passage comes

in on the right (easily missed) and connects to the right passage previously mentioned.

Beyond here another, much more obvious passage comes in from the right. *This goes a short distance then forks. Right is a squeeze between stals to a chamber then a crawl upward. This ends in a squeeze with broken stals, draughting out, which can be reached from the main route left at the fork. Left at the fork leads steeply up a ramp to boulders. Squeeze through two holes and continue up until you emerge at a huge ramp. From here, following up the ledge on the right wall leads to a passage steeply down and then the draughting stal squeeze mentioned previously. The main ramp descends to a boulder choke. Up the ramp becomes steeper and looser with an awkward climb. The passage continued upwards but was deemed too tricky to continue in without gear.*

The third choke, Synchronised Blackout, which gained its name owing to the draught blowing out everyone's carbide lamps, is easily passed on the left. Beyond, the passage becomes still larger and you soon reach FFS Chamber. This is approached from a large ledge on the right wall. No good rig was found but a max 25m rope rigged from naturals near the top of the ledge descends around 10m over steep, dry mud and rock to reach the main chamber. Good drinking water can be collected near the base of this pitch.



Figure 45: Becka Lawson overlooking Outrageous Junction. Photo: Chris Scaife

The cave continues steeply down to the fourth and final choke, Arm Stabber, which descends steeply on the right at the base of the slope. This is longer and more complex than the previous three chokes and is irritatingly full of stalagmites, stalactites, crystals and popcorn. Descend through the boulders and speleothems, keeping to the left of the formations seen below (but multiple routes possible). This emerges into a large, steeply descending passage, which soon leads to the lip of a large drop – Outrageous Junction. Carefully traverse high along the left wall above the drop. From here, continuing along the left wall leads to a large passage and a huge, terminal boulder choke. However, the way on is to the right, down a hand-line climb to the base of the drop. The climb descends right starting from just before the left passage leads off. The climb can be rigged with a max 20m rope on naturals. At the base of the climb, the main passage descends steeply to another choke. However, the way on is not at the bottom; instead, descend over boulders and head to the right wall (follow the worn route) to the base of the 15m up-pitch, Rocky Horror Show. This accesses an obvious phreatic tube. The rope was rigged from a large speleothem in 2020 and was used again in 2024 when two home-made rope protectors were added to reduce the severe rope rub; these remain in place. Drilling anchors for this pitch should give a better hang.

Rocky Horror Show enters Sceptics' Contrition. The elliptical passage, with mounds of sandy mud dunes and boulders, is easy going with a short section of impressive helictites farther along the passage on the right wall. A trench develops in the floor and the mud becomes thicker, with water heard running in the distance. Descending a sandy slope, a small stream enters from the left, with an even more impressive shower of water spouting from the roof. The inlets join, creating a dam, and descend into a right-hand wall. Continue over the stream and water-drenched boulders.



Figure 46: The civet skeleton in Sceptics' Contrition. Photo: Chris Scaife

The passage turns 180 degrees back on itself and the streamway rejoins the main passage and descends through boulders once again. Continue on a descending zig zag to a 4m handline climb down using a max 12m rope rigged off a convenient boulder (a knotted rope was rigged in 2020 and left in place in 2024). At the base of the handline climb is a junction. *An easy climb up on the right leads to greasy passage rising steeply with some fine decorations near the top on the right wall. To the right, the passage fizzles out whilst a short passage on the left, Hexadecimal (with a civet or similar skeleton near the start) leads to a steeply descending mud ramp that degenerates and has no draught.* Back at the junction below the handline climb the main passage turns 90 degrees left and immediately after this good drinking water can be collected. Take care not to trample the civet skeleton on the main track just beyond here. The descending passage becomes more awkward with muddy, slippery, car-sized boulders but eventually relents to become easier going and emerges overlooking Serendipity River Passage.

The pitch down to the river was rigged with a max 25m rope off naturals (a boulder in the middle of the passage in the mud) down a steep, mud ramp followed by a 4m free hang into the river. Upstream can be followed for ~150m and is easy going to a sump. Downstream leads to ~700m of walking, wading and a couple of short swims before ending at the downstream sump. About 200m downstream from the pitch there are a series of inlets from the roof and a crawling passage on the left that was not pushed to a conclusion. Back at the base of the pitch into the river, a large passage on the opposite bank can be followed up a steep mud ramp. Initially large, this passage soon chokes with mud and dead swiftlets, dashing hopes of an upstream sump bypass (this passage is 10m above the upstream sump).



Figure 47: Tim Allen and Chris Scaife at the pitch into Serendipity River Passage. Photo: Mark Burkey

Media Stories

As this expedition featured the owners of both Descent magazine and the UK Caving website, it is hardly surprising that there have been a number of reports online and in print. The text in the below articles is exactly as it appeared when they were first published, but those articles featured different artwork, including surveys and photographs. To see these pieces at their best, visit ukcaving.com for Tim Allen's write-ups and see Descent 297 for the article by Chris Scaife.

In addition to these, a news piece was published on the Mulu Caves Project website on 5 February 2024:

mulucaves.org.uk/news/new-river-passage-discovered-under-gunung-benarat

Attrition – the story of the first man down

(first featured on UK Caving)

Tim Allen

It happened on the first proper trip of the expedition, although many of the team had done the nursery trip of Cave of the Winds to Clearwater back at National Park HQ. The aim of our trip today was familiarisation with Cobweb Cave, to learn the complex entrance route, to check if the 2020 Monolith climbs were still roped and to take a few photographs in the beautiful tunnels of Bypass Bypass, Bogeydom and Huskey Hall. For my own satisfaction I wanted to do a loop I'd not done before, it involved a section of the Cobweb River and would also be fun for a few photographs. I had previously done most of the loop passages but not a short section which looked like it made the easiest traverse.

There were two other teams out that day with different missions and so we were six for the Cobweb loop, Pete, Stu, Lisa, Chris, Mark and me. All started well. Navigation of the entrance series went without a hitch. This is a huge passage, 40m wide in places, with a great roof but a hell of a jumble of boulders for a floor. The boulders are huge, house sized in places, and there is only one zigzaggy route across them. This involves traversing the arêtes of these monoliths with large drops on either sides to climb downs that allow progress to be made to the next section. In other places there are drops, traverses around holes, but also some easy bits. The nature of the passage becomes more significant later.

It is hot, unimaginably hot if you aren't acclimatised or experiencing the tropical conditions for the first time. We are 4 degrees north of the equator and less than a few hundred metres in altitude. We come to the Air Conditioner, where the strong cool draught blasts along a notch in the wall. It is great for a rest spot and to try to stop sweating for a moment at least. There is a sandy crawl, a luxury as crawls go and it bypasses a steep up and down boulder slope by cutting a corner. Beyond the passage rises and rises, up and up a long hill, to Top of the Morning. 'The' Monolith passage goes off here, which has an up pitch. We check the rope is still there as this will be our return loop. It is. We take the remaining route from Top of the Morning, down a very steep hill for several hundred metres. At the bottom a small rift in the wall is the only way into the Bypass Bypass where it expands again to normal Mulu dimensions. Over the next hour or so, this is where we take a number of photographs as we head down towards the Cobweb River.

Figure 48: Pete Hall, Stuart Weston and Tim Allen in Cobweb Cave, just before Pete's injury. Photo: Mark Burkey



Just before the river we stop for a lunch of chocolate, nuts, dried fruit etc., at a water source where we fill up our water bottles. Suitably refreshed and cooled, we follow the inlet water for a bit, climb up through a slippery hole into the Rubic Tubes. It is easy flat walking. I'm in front, Pete behind me. There is a mud slope of a few metres to a muddy puddle, a short climb up to a muddy ridge and I am looking down at the Cobweb River. I'm thinking it will make a great photo, that we are half way round the loop, will the way be obvious, etc.

My thoughts are broken by a shout, a snap and a scream. Pete is in the muddy puddle groaning. I'm not really sure what has happened other than he has clearly slipped down the slope. I wait to see what happens, perhaps he'll get up and laugh it off, you can never tell in those first few seconds. But no, it is starting to sound serious. We all try to help, persuading Pete out of the mud, up the slope to the dry flat area above. Things are clearly not right – what was the snap? A broken leg, dislocated knee? It seems he has slipped on the slope, his one leg has shot forward and he has come down on his other, leg bent double beneath him. Luckily Pete has trousers on with zips up the legs so it is easy to examine the knee. It looks ugly. A detached tendon is our amateur diagnosis at this time. It doesn't really matter, Pete is in trouble and is going to need considerable help to get out. In our minds, I'm sure we're all thinking of the entrance series – how the hell will we get him through that lot?

We are measured and unrushed in making our plan. As I know the cave best I will go out to alert the rest of the team. Chris is going well and elects to come with me. We have a mental list of what we need to bring back with us and set off at a steady pace. That leaves three to look after Pete. I already know Pete will not sit still for long, he's proven that before. I expect that once the initial pain and adrenalin rush has subsided he'll want to make a start on getting out. Shuffling on his bum all the way if necessary. That reminds me to rummage through his stuff at camp and see if he has a spare pair of shorts.

We're at the entrance in something over an hour and a half. I've pondered the route on the way. I'm sure Pete is not a stretcher case and helping himself is going to be the best way. It is a steep, rugged, jungle track down to the plain – that won't be easy either, then it is just the 4.5km back to our base at Camp 5.

It is still daylight. I spend the trudge back thinking of what to say to the rest of the team when we arrive. I don't want to be dramatic but do what to convey the seriousness of the task and the fact that we are likely to be up all night!

We arrive in the usual sweat. Thankfully the others are back from their missions. Everyone gathers round for the briefing. Essentially the plan is to control pain, immobilise the knee and help Pete out as much as he needs. Our local crew will attend the entrance at first light with the stretcher in case we need that for getting Pete back to camp. Everyone gets a job and prepares for the task. Becka and Frank sustenance, Chris and Loz extra first aid, Mark and Will ropework, etc. Our camp manager rushes out some food so we can eat a good meal before setting off.

It's been raining. It is a rain forest after all. By the time we get back to the bridge to cross the Melinau River it is in full, impressive spate. We set off at dusk but very soon it is dark in the forest. We are in good spirit but it is a trudge, my body for one was not expecting 20km of walking and two caving trips in a day, well not this early on in the expedition.

I lead the way again through the chaotic breakdown of the entrance series as other than Chris's trip earlier that day no one has been in this cave before. About half way back to where we left Pete we glimpse light. Surely this cannot be them, but it is. Mark is out ahead looking for the way, Lisa and Stu some way back with Pete guiding and supporting him down a slope of boulders. There is a suitable area for rest and to gather just at the bottom of the slope. We dump the gear and set up the stove whilst Pete is assisted down to join us. He is in remarkably good spirits.

It is six and a half hours since me and Chris left Pete. It seems that we were right to assume he would want to make a start out. Stu and Lisa had fabricated a splint out of a transporter sack and strapping. That had worked well. We learned that at first Pete shuffled on his bum with Stu taking the weight of his ankle in a tape sling. Soon though, he was upright, being supported, partially hopping and having his leg guided for him. They had all done extremely well to get so far. Although in that six hours they had covered the ground which took us about half an hour or so, it is still a long way to go.

We rested for a while preparing for the next phase. The food we brought in was consumed although not much was eaten by Pete. The tackle bag was replaced by four SAM splints bound up with gaffer tape. More medication was offered but Pete and all of us were keen to crack on and get it over with. Remarkably his pain level is low.

It was perfect timing that the point they had reached was really the start of the awkward entrance series. Just where we met them was a climb down fretted boulders above a deep pit and then a traverse on ledges around it. Just about manageable for an able bodied caver without a rope but it was going to need rigging for Pete. Will and Mark kitted up, the drill came out and bolting began. I was surprised how well Pete moved. He could just about weight

bear for long enough to shuffle his foot position with assistance. Of course he was roped up too, lowered or lifelined as appropriate.

And so it went on across all the obstacles of the entrance series. Mark and Will attended to all the rope work. Stu and Lisa were in close attendance to Pete helped by others as necessary, whoever was free carried gear and I mostly went out front to point out the best route. To describe just one example of the terrain, starting down a long steep boulder slope. At the bottom it turns vertical for five or six metres over massive blocks. Up against the wall, on just the one side, is a near vertical climb down smaller muddy blocks. Across a rocky floor is a climb up a steep slab with some calcited holds. At the top a rocky arête must be traversed first on sloping ledges to the left and then over the arête to ledges on the right. Down a small jump and then across a bold step to land on old fretted boulders and onto more of the same. Repeat. Around midnight we arrive at the final muddy slope up to the entrance exhausted and ready for a sit down and chocolate. Pete seems in no mood to slow down sensing, I think, the end of the ordeal. The last big task for all of us was getting him down through the forest and the jagged limestone mountainside to the flat plain of the Head Hunters trail below. Here we split up, with those not needed to help Pete on the stagger, heading back to Camp 5 base in dribs and drabs. I know I was fairly knackered. Pete took three and a half hours to hobble the 4.5km arriving in the early hours. The stretcher crew was not required.

That ended Pete's expedition of course. His experience, motivation and humour would be sorely missed. He rested up at camp for a couple of days before heading down river. Strapped up, he still had to hobble 8km to the boat with a porter to carry his sack but he didn't want any of us to accompany him. He wrote us all a touching note of thanks in the expedition logbook. Cheers.



Figure 49: Stuart Weston and Lisa Wootton helping Pete Hall in Cobweb Cave. Photo: Mark Burkey

Escape from Mulu

(not previously published elsewhere, but follows on from Tim's report above)

Pete Hall

I spent two extra days at Camp 5 getting ready for the trip back to Park HQ. On the third day, Jimmy arrived after breakfast ready to carry my rucksack and we set off on the long plod to Kuala Litut. I had to watch my footing at every step, which took a tremendous amount of concentration and even so I fell several times. The first ruined the splints I had taped on to my leg and each fall left me lying on the ground in agony before struggling to my feet. Jurau appeared halfway back and we eventually reached the boat at about 1pm. They had managed to bring it a kilometre or two further upstream and soon we were at Park HQ.

Next morning (Saturday), Veno and I went to Miri and Veno's nephew Karl took me straight to the hospital emergency department. In an hour or so I'd had an MRI scan and consultation and been offered quadriceps tendon repair surgery after the weekend. Then I checked in at the Mega Hotel for a very boring week of waiting. I mistakenly thought I should ask the insurance company what to do but I wouldn't recommend this as this was not helpful and just resulted in delays while they failed to provide any useful guidance. Their plan was to get me home so I could go to the A&E in Lancaster. By Tuesday I had chatted to lots of people, in particular the orthopaedic surgeon Dr Richard Chen, who emphasised the urgency of surgery to make the quickest recovery. As Lancaster A&E and NHS treatment in general are inconsistent with urgency, I decided to follow his recommendation and surgery was scheduled for Friday – already 10 days after the accident.

My wonderful wife Sarah had decided to travel out to look after me. At first, I thought this was unnecessary, but she arrived on Friday evening after the lunchtime surgery and I was so happy to see her after the depressing, frustrating week I had had. She promptly moved us from the slightly shabby Mega Hotel next door to the brand-new Mercure Hotel. I was stuck in the hospital until Sunday afternoon and as soon as I was out, we went for a slap-up dinner and several drinks at Ming Cafe – It was like being released from prison.

The insurance company's assistance line remained as useless as ever and we ended up booking the return journey ourselves, business class to London as I couldn't bend my leg. Then, with a brief stop in a hotel at KL airport, Uber to Euston and train to Lancaster.

Then started the long rehabilitation phase, which involved learning to walk again. Six weeks with a straight leg knee brace and a further 10 weeks gradually working up to bending fully and taking full weight. I was able to resume surface activities like cycling and surface digging after 10 weeks, with underground activities two or three weeks later.

Having been told the BCA insurance would not pay out for surgery, I submitted a claim for everything, even Sarah's fares. They paid out all the rescue, medical, Miri accommodation and repatriation fees, about £5,200 in total. However, I was only able to do it with a reasonably large credit card limit, an option not available to everyone. So I would highly recommend BCA travel insurance as well as Borneo Medical Centre in Miri. Dr Chen, the surgeon, has been fantastic helping promptly by WhatsApp, even at unsociable hours! NHS physiotherapy started promptly only a week after I returned home.

I would not recommend bothering with the emergency assistance, which was nothing but a hindrance. I'm glad I didn't follow their plan as I am still waiting and hoping for my first appointment at the Lancaster hospital orthopaedics after 20 weeks.



Figure 50: Stoic casualty Pete Hall in Cobweb Cave. Photo: Tim Allen

Photographing Serendipity

(first featured on UK Caving)

Tim Allen

The attrition on the expedition continued with one more member going home, this time on compassionate grounds. There was a string of the usual injuries, mostly as a result of the harsh terrain, which seemed to affect at least one person at any one time. Cuts, grazes, twists, sprains, Mulu foot, etc., all featured with someone at some point during the trip. It is no surprise as one of the early explorers described the Mulu limestone as “the most inhospitable terrain known to man”. Not many Mulu cavers would disagree I reckon.

So, onto the main discovery of the expedition, Serendipity, the downstream river of Cobweb Cave, the principle drainage route under Benarat mountain. Except readers, it wasn't my discovery, so I can't relate that particular story. That belongs to Chris, Lisa, Stu and Becka. I'm hoping Chris might write up his account of the exploration for Descent. However, I did visit the new river passage on a photographic trip with Mark Burkey, Will and Chris so I can say something about it and also put the discovery in the context of the exploration history.

One of our main objectives for this expedition was to look at leads off the high level passages of Cobweb Cave. These had been seldom visited since their discovery on the 2000 expedition, but a significant breakthrough in 2020 had left a large trunk passage wide open....

Cobweb Cave, itself, is mostly a complex, low lying maze of abandoned phreatic loops and passages with several points of access to short sections of the main river which drains the 1600m high limestone mountain. Above all these passages, is a much older level which is now connected to other caves further to the east. Some of the entrances to these caves are located in the famous 500m high, sheer South Benarat cliffs.

In 2000 the western side of the high levels was first entered from climbing pitches and ramps above the tangled web of Cobweb. The first of these passages was named Just a Mile, as 1.6km of passage was surveyed on the breakthrough trip. These were then pushed further to end in chokes with one captivating lead high in the wall at Outrageous Junction. Further to the east, during 1980's exploration, another cave, Benarat Caverns, had been explored, threatening to singularly punch its way straight through the mountain. It wasn't until the mid-noughties that another great discovery, Moon Cave, was made, situated right between the two. This was soon connected to both caves and so formed the 50km long Benarat Caverns System. Hopefully you are still following.

In 2020 climbs were made from lower parts of Cobweb and surprisingly these emerged out of the floor of Just a Mile giving another route into these passages. However, all access routes to this part of the cave entailed a hell of a lot of caving. What was intriguing was an entrance near the beginning of Just a Mile that broke out onto the hillside. In fact, to get into the continuation of the cave you had to practically walk out into the forest and back into another entrance to continue. This entrance was key to better access but several attempts to find it from below had failed and one attempt to cut a trail down from it had floundered in the inhospitable terrain.

I hope that paints the picture of the general layout of the cave. The key lead for the 2020 trip



Figure 51: Tim Allen in Serendipity River Passage. Photo: Mark Burkey

was the passage high in the wall at Outrageous Junction. Mark Sims, with Simon Cornhill's support led a most treacherous and daring climb to gain access to it. Having seen it now for myself it really was a remarkable piece of raw exploration. I'll see if I can persuade Mark to publish his account of the climb on this thread as it really is an exhilarating read.

Anyway, on the day of that climb they surveyed large open passage for a kilometre before building a cairn and setting off back on the five hour trip back to their camp in lower Cobweb. There was no opportunity for a further visit on that expedition so this is how the lead was left... and four years passed by. I cannot tell the story of the exploration beyond that point this year because I wasn't on those pushing trips. I can recount, however, my experience of the photographic trip we made to record the new finds beyond the cairn. That's coming up next.

The attrition rate was still high. Three of the four original explorers couldn't return with one injury or another. Chris was to lead us, Mark to photograph and me and Will along for the ride – and to help carry the kit and pose a bit I suppose.

I mentioned there was an entrance to the Just a Mile passages and locating this had been a priority during the first few days of the expedition. We had employed a local tracker, Jarrah, and by combining our modern GPS locations and traditional knowledge the entrance had finally been located. This had then been used for all the exploration in the higher levels of Cobweb.

Our photographic trip set off from Camp 5 around 8am. Accompanying us was Becka, Loz and Stu who were to look at some side passages off Just a Mile. Camp 5 is on the south side of the Melinau River, Benarat lies on the north so the first part of the walk is the short trek up the gorge to the wire bridge. It takes sixty-two wobbly steps to cross. I have counted. You do need to grip on tight to the wire handrails but at the same time watch out for the large soldier ants which also use the bridge to cross the river. The large open space of the rarely used helipad follows and then it is into the tunnel of the rainforest canopy for the 4.5km ramble along the Headhunters Trail. This is a motorway of a track which runs parallel to the mountain and

eventually leads to the most northern gateway to the National Park after a further 11km.

We arrive at our track mark, a blaze on a tree, which signifies our turn off. It is only 50m more of flat going and then we reach the rugged, steep limestone and it is up, up and up. We ascend a sort of valley, not that you can see much of it. Even on the limestone the forest is thick. Heavens knows how anything grows here, the limestone is bare except a covering of roots, decaying matter, moss and other thin vegetation. Every plant has its niche, from those who race to the light after a tree fall to the fungus which devours the mighty giants. It is the sort of thing to contemplate as we climb up the hill, sweat pouring out with the exertion, but ticking off the landmarks as we go; the small draughting entrance with its cool breeze, the log balancing bridge, the mossy highpoint and the final drop down into the doline and the entrance across the other side. It has taken a speedy two hours and everyone rests to try and cool down.

We all have large transporter sacks. Marks photo gear is split into a pelicase and two darren drums. We have five ropes and SRT kits for the pitches, water bottles, food and only essential other bits and bobs. We discuss where we can fill up with water so we can pace our water consumption. I always carry a one litre Nalgene bottle. Its wide top allows it to be filled quickly from drips and small inlets. We drink water from this type of source unfiltered with no problems, but it is critical to make sure we drink regularly, litres of the stuff. On a long trip you can knock down a litre at every water source, fill another for the journey between, eventually get back to camp, drink more water, several cups of tea and still not manage a piss all night!

We set off into the cave. I have only been here for one trip during the original discoveries in 2000. I'm not going to remember much of it. I do remember, however, one of the first obstacles – a bloody crawl! The large 20x20m passage is blocked by a choke and the only way through is a crawl under the wall on the right hand side. It is bouldery and sharp but the big difference between here and caving at home is that we are nearly naked with just the thinnest of thin garments to try to protect the skin from scratches. With the big bag it is not a speedy manoeuvre nor very pleasant.

Like the surface the terrain underground, in this passage at least, is also fairly inhospitable. It is nearly all up and down over piles of boulders. Rare is anything really easy and we watch our footing at every step. There are traverses and climbdowns, walls of crumbling sediment, even a skylight to pass. There are dry rocks, muddy rocks and downright lethal slippery rocks and it is often hard to distinguish between the types. Every now and again a cry goes out, someone has slipped, but it is ok. We carry on.

There is delay, something is going on behind. Yet another shoulder strap has broken on these bloody awful Petzl Transporter bags. Three will break on this trip alone. It is a glaring design fault but Petzl doesn't seem to care. The strap is tied up to the waist band and we carry on again. After an hour or so we all fill up at a convenient water stop. An inlet falls from the roof, splashes down onto the sloping wall and disappears into a bedding crack. It re-appears as a spout near floor level. Perfect.

There are two more chokes which involve a bit of a crawl but nothing as bad as the first. Swiftlets, remarkably, fly through these too. Why do they come all this way in when the



Figure 52: Chris Scaife at the beginning of Sceptics' Contrition. Photo: Tim Allen

passages before already offer all the roosting space and protection they might need. They are incredible birds. Imagine being born in a nest high on the wall of a cave, several kilometres from an entrance. They must fledge in pitch blackness, learn to fly and find their way out of the cave to feed. We might have it easy in that respect but flying through these caves would have its advantages. The cave floors in Mulu can be pretty bad, boulder strewn, but the roofs are nearly always the grandest features, beautifully shaped, if only we could be up there too. Eventually after a couple of hours we come to FFS chamber where the others will leave us.

At FFS it gets bigger and there is a pitch to rig. Stu points out the belay they used. A thread in a large rock embedded in the mud. I rig and drop down the wall. Rope free. The boulder floor soon starts dropping steeply down, the scree at the very limit of its angle of rest. A long way down we come to the final choke, the Arm Stabber. Lots of pointy stal and popcorn everywhere as we thread our way down and through. It is really just the same boulder slope but the roof has come down to practically close up against the scree. It opens out again and here we are at Outrageous Junction where the scale is big again.

We work our way between the house sized rocks and come to a drop. It is a muddy boulder climb. I scrabble down before realising that I am actually carrying a rope for this climb. Oh well! Will is nearly down as Mark starts climbing at the top. He sends a rock down which Will has to catch like a rugby ball coming out of a scrum. It takes both hands, one of which is really needed for holding on. He sort of skis to the floor holding the rock. It is actually quite funny to watch!

Here we are at the Rocky Horror Show. The base of the 20m pitch up. It is higher than I thought and the rock even more shit for climbing. Hats off to Mark and co. We decide we will

stop for lunch at the top and I head up first. We gather on a pleasant mud bank. What is for lunch? Unusually we have all dipped into the snack bin at camp 5 separately, aware I think of the need to have plenty of fuel for our individual needs but not wanting to carry a huge picnic. I've got lots of chocolate, it's manufactured differently out here so that it doesn't melt in the heat, peanuts, peanut brittle, and a tin of curried tuna,, which is actually really nice and has potato in it as well. Others have taken a lucky dip from the variety of the dried fruits we purchased. Dried purple sweet potato seems popular. They kind of look like black liquorish sticks but taste totally different – edible though.

Refreshed we plod on. It's a great discovery and we pass some amazing formations. At a knotted rope climb a large side passage goes off and the terrain reverts to boulders. We pass under an arch caused by a huge, I mean huge, block leaning against the wall and some way beyond we come to the cairn built in 2020 as the limit of exploration. We know it is not now far to the river.

The river junction is impressive and we pause to sort photographic gear and have another snack. It has taken us five and a half hours from the entrance to reach this point. The river is below us running left to right, straight ahead the passage continues on the other side. A four-way junction! Wow the explorers must have been excited finding this. It is a pitch down a long steep slope and then a final 3m overhanging drop, landing in knee deep water. The flow is swift but a very comfortable size. I wonder how it might react in flood – it always rains here. I put those thoughts out of my head and we head downstream. This is fun and I am glad to have made the effort to see this myself. Chris points out some of the best sections to photograph as we race downstream. Eventually Mark calls us back. The roof has started to get muddy as we approach the downstream sump. No good for photos apparently. We head back and start work. Mark is pretty quick as a cave photographer and I like his style. I reckon Mark will be happy with five or six quality shots. Of course each of those photos will take dozens of shots to get the lighting and posing just right. We take some close ups and a long passage shot, going backwards and forwards trying to remember the best bits. We don't actually look at the whole length of passage which is about a kilometre long and the longest section of river in the system.

Finally, we take some photos at the pitch on our way out. It is my turn to pose. After numerous flashes Mark says I look bored. I try harder to find the right facial expression and he tells me that is better. I hope so. I don't want to ruin his picture. We derig the pitch and start the long journey out. I guess we have been just a couple of hours in the river. We speculate what time we will get back to camp 5. Early hours of the morning for sure. There is at least seven hours to go!

We start back following the same route. We are effectively climbing from the lowest point in the cave to the highest levels. I have changed into a dry pair of socks at the Rocky Horror. It is my one luxury as feet need to be looked after more than anything in Mulu. The route through the Arm Stabber choke is not so obvious from below and it takes a little searching to find the correct way. As soon as we do find it there are arrows and cairns to guide us through. I feel quite good until about half way back through the cave. Despite the fresh socks my feet are starting to ache. I think we are all engrossed in our own little bubble of pain. Mark certainly is. He has slipped on a rock, put his foot down a hole and wrenched his knee. We try to keep together so that Mark can follow without having to route find as well. Whoever is in front

must pick out the best route, the worn path, often the only way to traverse the 20m wide passage. It becomes endless. I think of what might be the next memorable feature and it takes ages to materialise. There are hours of this still to come.

Eventually we reach the skylight, although everything is dark. We only know we are there because the rotting chunks of tree are suddenly so foreign to the environment. We arrive at the squeeze. It is absolute torture now to get our tired bodies and bags through. The strap on Will's transporter breaks – a final insult to make the journey back even harder. My older style transporter is one I've had for over ten years, it's been on many expeditions and, although tatty and worn, performs well. Petzl – what has happened to you man! The entrance arrives. Vegetation, leaves and trees – there is a new smell. There is the patter of rain, or certainly dripping from a recent shower. Most of all there is noise, the whop-whop frogs, cicadas and a million insects trying to make themselves heard. After a rest we pull ourselves up for the final push and set off out into the forest. It is well after midnight.

I'm in front. Mark has said not to wait for him as he is happy to limp back at his own speed. Behind me I hear Will and Chris stop to look at a large tree gecko they have spotted. I can't stop, I just need to plod on. The route down from the entrance is steep and the limestone unforgiving. The knees are protesting now. It takes a long hour to regain the alluvial plain and the Headhunters trail. I can't hear the others now. I drink my remaining water and fire in a spearmint gum before starting on the final 4.5km to where it will end. I now want the day to have had been.

It is such a plod, a sheer hell in many ways, feet bruised and on fire, knees aching, rucksack heavy, digging in. It goes on forever. The kilometres tick down slowly and then after an age there are lights through the trees – camp 5 at last. Surely no one is up, it must be three in the morning. A final wobble over the bridge and I spot Balang, our assistant camp manager, then Steven (camp manager) appears too and starts to cook. The others follow in soon after. Wash, change, food and hobble to bed. A monster eighteen-hour trip – I'm going to be chuffed to death with that in the morning. I hope the photos are worth it. It is difficult to stay awake.... looking forward to a lie in.....zzz.



Figure 53: Will Yu-Pearson in Serendipity River Passage. Photo: Mark Burkey

The Climb to Corner Cave

(first featured on UK Caving)

Tim Allen

This is a story more about a climb than a cave. However, the intention was to discover caverns measureless to man. So how did that turn out?

It was back in 2015 that others, not me, first recorded a cave entrance high in the cliffs on the south east corner of Gunung Benarat. Attempts at that time to reach it were unsuccessful due to the verticality of the cliffs. A photo of the entrance was taken from the other side of the gorge, nearly a kilometre away, which had everyone convinced that the chances of discovering a major cave was high. Adding fuel to this conviction was the discovery near the base of the cliff, directly below, of a strongly draughting choked entrance. A sign, it was thought, that something big must lie behind this part of the mountain.

A major attempt to reach the entrance was made during the 2020 expedition. In fact, two members of the team spent nearly their entire expedition on the project. This ultimately failed as well but much was learned on how best to approach the climb. The problem was that the only known route to the base of that cliff was via the river which involved a paddle and a wade in swift water that involved 13 river crossings. This was a glorious route when water levels were low but impossible to life threatening when the river flooded. From the river it was then a very steep slog up a gully and forest covered scree to the base of the cliff. Much time was spent trying to find an overland, all weather route, to the same place but this was never achieved. On the one trip in 2020, when I accompanied the climbers as an observer, the need for this all-weather route became obvious. As the climbing floundered on loose rock the rain started to fall. It soon became a free-for-all back down the river before a flood pulse washed us away - or forced us into a night clinging to a tree or rock ledge. We made it back only half an hour before the pulse came.

With all the effort that had already gone into reaching this cave it became impossible to ignore and so it was made a major objective of the Benarat 2024 expedition. My plan was that others would do it and Mark, Will and Frank seemed keen to take it on. They had a couple of attempts at cutting a new track on the north side of the river but found themselves in difficult ground. An attempt up the river proved the level was too high when they were washed off their feet at one of the crossings. Then Mark received news from home which meant he had to return without delay. That left the Corner Cave team, as it was known, short of a climber. So, as someone with the right skills, I reluctantly became involved.

The first thing to do was to find that dry route to the cave. However, just finding any route there would do to start off with so with river levels down, me, Will and Frank set off up the gorge on day seven of the expedition. It is a fabulous route in the right conditions. The crystal clear, fast flowing river is a beauty. The forest hangs thickly to the sides and overhead, sunbeams abound, and it offers the largest space around, so makes such a pleasant change to our other walks amongst thick forest.

The first kilometre is on a flat track right alongside the water. Then small cliffs pinch in from the sides and the rest of the route zigzags in the river itself. There are 13 river crossings where the main flow must be crossed, usually directly above sections of rapids. Then on a notable



Figure 54: Difficult terrain on the approach to Corner Cave. Photo: Tim Allen

bend in the river you strike off due north, up a gully at first, then up steep screes directly to the bottom of the cliff. On this day I cut track and we arrived just below the draughting cave – spot on. A cairn, built in 2020, was still obvious. The previous climbing attempts had all taken place on the righthand side of a cleft which scars the face all the way up to the entrance. These had floundered on bad, dangerous rock. I had a hunch that the lefthand side would present solid rock as this was above the rising cleft and it was not my first experience of a climb up to an entrance in the gorge. Consequently, we found a ‘viewing platform’ on this side where we would start the climb from. There was a strip of clear rock leading up to three consecutive overhangs which all looked passable to the side. That would be the challenge for another day. Before we left I climbed up into the choked entrance to look at the prospects there. It took a very tricky manoeuvre from a tree to swing into the rift perched just 8m off the ground. Lying inside there was a twisted up sling and snaplink karabiner and it awoke a forgotten memory of losing it on my other trip there four years ago. Back then, I realised, I had dropped it but was not prepared to risk the dodgy climb again just to recover a sling and krab. Now I had. Inside the entrance it was standing height and narrow, but barely 2m long before a complete choke. However, the rocks were clean and all of a manageable size and digging prospects looked excellent – well if we were back home they did. I joked with Will that we should sack off the climb and go get some crowbars.

The next day Will was already committed to another trip so I took on the job of finding a dry route to the foot of the cliff. For this I had already recruited Jimmy and Jarah a father and son team from the Penan village down river. Jimmy was a young, modern Penan but his dad was definitely old school Penan still in tune with hunting and gathering. The only way I could brief Jimmy on where I wanted to go was to direct him towards the prominent prow in the upper cliff line. He translated this to Jarah and we set off early. I took a radio to test comms back to our camp 5 base and a GPS to track our...er...track. Jarah led the way and I took the opportunity to slow Jimmy down with a bag containing 100m of rope and 25 hangers

Figure 55: Will Yu-Pearson crossing the river en route to Corner Cave. Photo: Tim Allen



and krabs. It certainly didn't slow him down at all and we were soon setting a brisk pace. We crossed the bridge and Jarah stayed close to the river at first, then, as we reached the rising ground he headed up on a rising traverse. I could see we were following a very feint track, but in several places it was destroyed by tree fall. I sensed this was a track that would lead us right around Benarat, a route I had taken once many years ago. We happened upon an old hunting camp where just the roof pole of the shelter remained. I was looking out for our track from the day before as we were certain to have to cross it. Sure enough, we crossed a gulley shortly after the camp and there were our blazes heading up the hill.

We followed it to the top and found the cairn. It had taken just two hours. I tested the radio and made contact with camp 5. After a rest, we set off back leaving the bag of gear on the viewing platform. Jarah cut a new, shorter track back to the hunting camp and from there we followed our same route all the way back. We both marked this track heavily so we could follow it in all conditions. Every few metres of the route you need to be able to see either saplings cut and bent over, blazes on trees, upturned leaves or chops on fallen logs otherwise it is very, very easy to lose the way. The golden rule is never to lose the track. If you can't see the next mark, go back until you do and search from there for the next one. Never, ever just blunder on in the hope you'll find it again. That is how to get completely lost.

A rest day followed and then it was me and Will off to the climb. It probably only took an hour and a half's fast walk to get there but then it was at least another half an hour to cool down enough to do anything. I stepped up for the first stint and loaded up with drill, hangers and rope. We were using HKD drop ins which require a short 10mm hole and a setting tool to fix. We were also self-lining with a shunt. I've done a lot of aid climbing like this and it is my preferred method. Will, as an IRATA level 3, as well as an experienced caver seemed happy with the system.

I placed 20 anchors. With each one I gained about 1.2m in height. I tied off the rope and abseiled down recovering all the hangers on the way down. As the climb headed slightly over to the right I had to leave one hanger in for a deviation otherwise we would land in the trees below. Will swapped with me and set off up. After another rack of bolts had been placed he came down dripping in sweat.

I went back up for one last stint. The heat was now incredible. Not just from the direct sunshine but the ambient heat radiating from the rock. It was like bolting in an oven. Will had got up past a tree which offered a little bit of shade but then it was back on the hot, bare face. I didn't last long. Five more bolts and I was cooked. We headed back to camp pleased with progress. We must have gained 50m up the cliff and were already level with the second overhang. On our way back we startled a large beast. It startled us too. It moved so fast it was impossible to identify what it was other than a noisy, blurred streak of grey.

Next morning walking to the entrance we disturbed it again, at almost the same place. This time we could see what it was – a great big monitor lizard. Scared the hee bee gee bees out of me as I nearly trod on it.

We still didn't really know where the entrance was in relation to our climb. You couldn't see anything from the face. Frank volunteered to walk up the south side of the gorge and see if he could find a viewing spot through the thick forest where he could see us. When me and Will got to the bottom of the climb it was already too hot. Luckily for me it was Will's turn first so I could sit and try to reach a body equilibrium. He was gone for a good two hours. In that time I sat on the leafy ledge. It would have been nice to have a snooze but the forest has other ideas. There is a constant buzzing from the dozens of bugs and bees which surround you, mainly attracted by sweat it would seem. You are investigated endlessly by a constant stream of big ants and other weird bugs. There are some more pleasant things to watch. Butterflies flitting around and we seemed to be located under the favourite perches of a number of hornbills. They squawk and chatter and fly overhead like Lancaster bombers. That and snacking passes the time. Frank, somewhere on the other side of the gorge comes on the radio every now and then but he can't find anywhere to get a good view.

Will comes down. He's had quite a battle. The wall is steeper with dodgy rock over to the right which unfortunately is where we want to go. I head up with a new rack of gear. I also take my camera phone and parang (local bush knife) to make the way past the tree easier. It takes quite a while to prussic to the last bolt. It's hot, slippery and difficult to stay out of the vegetation. Will's high point is level with the big overhang but we are to the side of it so it is only a small step out and then vertical above. I sense that we really need to be over to the right more but I have to go vertically up to a vague line of trees which will hopefully allow us to traverse that way. It is a long way up but there is a good view at least – you don't get many views in the forest. The bolting is more strenuous and the distance between some moves is reduced to barely half a metre. Just one move below my target tree, where it looks like we can traverse rightwards at last, I run out of bolts. I take a few snaps and some video. It hasn't rained here but you can see thick cloud and hear a rumble of thunder over Mount Mulu some distance away. I do a bit of rerigging and head down to join Will and we trek back to camp. As the track levels out it comes very close to the river. It looks so inviting and we discuss plunging in. The track moves away from the river into the forest and after a few meanders around obstacles it is back alongside it again. Only now, in those ten minutes, it has turned into a violent raging

brown torrent. Without warning a flood pulse has arrived from higher up the catchment. Sure glad we didn't go for that swim.

Our study of 'the' photograph, published in the 2015 report, suggests we are at the right height but too far over to the left. A traverse from our high point makes sense, so we are back at the cliff the very next day armed with more rope and fixings. Just as we arrive at cliff base the heavens open and it pours down. There is nothing to do but soak it up and hope it is over soon. We both sit in silence with a tackle bag on our heads waiting for it to stop. After half an hour it does and Will heads up.

There are small streams now running off the overhangs and the rock on the face has become as slippery as ice now that the algae has become soaked. This is definitely type two fun now. A long while passes before I hear the distant sound of the drill. Will must be 80m above me now as I know there is not much left of the 100m rope we started the climb with. Frank has headed up the gorge again and makes contact with me on the radio. He has found a gap in the trees and can see Will. He is 20m away from the entrance directly to his right. I head up with more rope and all the remaining gear we might need. I'm sure it is going to be easier to pass Will somewhere on the traverse. It is a horrible slippery climb and takes me an age. I eventually get to the high point and pull up behind the tree. Will is out of sight around a buttress but he shouts to say he is out of rope and coming back.

I sit there taking it all in, chatting to Frank on the radio. I get him to put his light on and amazingly we can both see it in a dark gap in the forest way over on the other side of the gorge. Will appears around the buttress and we manage to pass at the tree. I head to the front. The buttress is a swine, dropping down and around, then up on the other side. There is then an ascending ledge of vegetation to the end of the rope at the top. Will has removed a couple of the hangers from the ledge so a good tension and balance is needed to avoid being thrown over the edge. I get the parang out again to chop some of the vegetation back making sure the rope is well out of the way!

I tie on a new 25m rope and descend a shallow series of vegetated steps. A few bolts are needed but it's pretty easy compared to what has gone before. There is a final spongy 'step' and I am at the edge of a drop into what must be the cave. The rope is gone, all bar a few metres, so there is no chance of getting down. I place a final bolt for a good hang and swing out for a look. It undercuts below and is maybe 15m to the floor of a gulley that then heads up into what might be a cave. There are lots of hanging stal, like dragons teeth, with black spaces behind them. I can't see any of the leaves from the creepers moving which suggest a lack of a draught. That's worrying, but it will still need checking out. I head back to where I tied on the new rope and bag up the gear just as the rain starts to pour. It is quite an experience and I take a quick video. Getting back around the buttress is bloody awful, not because of the rain particularly, it is just a really difficult bit of rock. I rejoin Will at the bottom and we trudge back to camp without further ado. In the rain, it is pleasantly cool for a change, however, it has brought the leeches out and by the time we are back at camp, two of them have had a good feed on my belly and back and I've removed another couple of hopefuls from my tracky bottoms. No one likes leeches but you've got to admire their sneakiness and determination. It has been three solid days climbing on the face and time for a rest day. I wonder how Leo Houlding, the famous climber, got on when he put up a route on the Benarat cliffs a few years ago. He can't have found it easy either. There is no internet or phone signal in the gorge so I

can't Google up his story but I make a note to do so when I get home. I wonder if the leeches found him up there in his porter ledge?

What with the track cutting, rest days and three days climbing it has already been a week of effort. Not to mention all that went on before I got involved. I hope it has all been worth it. Today we will find out. Will goes up first and I follow a short while later. He has another 60m rope to tie on. By the time I get to the overhanging drop Will is already down. He has managed to grab a tree branch and swing over to the other side of the gully. He gets a bolt in and makes a bit of progress upwards and then traverses into the gully and free climbs up to the top where we hope a cave will be. He disappears before coming back to shout that there are three ways on, all small, but I should come down for a look.

I follow. Will has used all of the 60m rope getting up to the top of the gully. He has already been to the end of the best looking route and that closed up. I look at the two higher routes, both flat out. They close up with the only point of interest a solitary bat hanging from the ceiling. So there we have it. Nothing more than an alcove after all. Will derigs the gully and the traverse and then I pull down the ropes in four sections. Nothing gets stuck, despite the trees and veg, at least we are fortunate in that. The climb took 185m of rope in all. Our bags are packed full, loaded on top and very heavy for the long walk back.

That's it, a big disappointment, but them's the breaks. At least we now know and it puts an end to nine years of speculation.

Many thanks to Spanset Ltd for providing the expedition with 550m of rope for free. This was used on the climb and elsewhere during the expedition and remains in the Mulu Project Store at HQ for future expeditions to use.



Figure 56: Will Yu-Pearson approaching Corner Cave. Photo Tim Allen

Serendipity

(first featured in Descent issue 297)

Chris Scaife

Whenever I see a departure board in an airport, I always find myself looking through the list of destinations and trying to decide which one I would most like to visit. But as I sat at Heathrow with Pete, waiting to fly out to Kuala Lumpur for my connecting flight to Miri and finally on to Mulu, I felt no compulsion at all to play this game. I was heading out on a caving expedition to Mulu and there was nothing in the world I would rather be doing.

Our expedition began in the usual way: a group of jetlagged but excited cavers stomped off to see Deer Cave on our first afternoon. Undoubtedly one of the natural wonders of the world, with daylight visible for most of its length and trees growing hundreds of metres inside the entrance, the place is too big to feel as though it really counts as a cave. More a valley with a ceiling in the sky. It is of course the site of a real wildlife spectacle, the bat exodus. We spent an evening watching millions of bats emerging from the entrance in an endless swirling mass, as bat hawks chased them at speed.

The following day, we travelled by boat to the Cave of the Winds for a sporting trip through to the enormous river passage in Clearwater Cave, and that was the touristy part of the expedition over. On New Year's Eve we walked into the wild. Having travelled up the Melinau River by boat, our cruise punctuated by kingfishers flying overhead and a snake swimming past us, we carried our gear on foot for 9km to reach Camp Five. All those clinking glass



Figure 57: Becka Lawson watching Mark Burkey cross the bridge near Camp 5. Photo Tim Allen

Figure 58: Stuart Weston et al on the Headhunters Trail, heading towards Cobweb Cave. Photo Mark Burkey



bottles in our rucksacks proved worthwhile as we saw in the new year with a selection of fine whisky under the moonlight shadow of Gunung Benarat's soaring limestone cliffs and dense rainforest.

We spent a reasonably hungover day spotholing at the base of Gunung Benarat and found a few short caves. A group of us then entered Cobweb Cave via the lower entrance and spent some time familiarising ourselves with known passage. Tim was at the front and just at the point at which he, and only he, could first see into the known section of river passage – with a puzzling hydrology; although it is accepted that the water flows to the Terikan resurgence several kilometres away, the source of this great river is still not known – there was a horrific snapping sound and Pete fell to the ground clutching his knee. With a ruptured right quadriceps tendon, there followed a lengthy rescue involving the whole team, but Pete really must be congratulated as quite possibly the world's greatest casualty. He was able to walk himself out, more or less; and, assisted by Mark, Stuart and Lisa, he had made astonishing progress even before Tim and I returned with the rest of the team and an enlarged first aid kit. I honestly think I made more of a fuss when I was bitten by an ant near the park headquarters.

For our first real pushing trip, I joined Becka, Stuart and Lisa in Cobweb Cave. We walked up early one afternoon to Cobweb Cave's upper entrance – which had been located by Loz, Becka, Veno and Jarah a few days previously, following Tim's discovery of a small valley heading in the right direction on our first day of spotholing – and set up our underground camp not far from the entrance. To keep ourselves entertained on that first underground afternoon, Becka and I went to look at an inlet not far along Justamile Passage. After a short climb up, we were into something that in most parts of the world would be considered quite large, but perspectives are different in Mulu. In total, we surveyed 259m of mostly walking passage with some fine speleothems. There was gloopy mud underfoot, which had repelled the first cavers

to enter the inlet, but it would take more than that to hold us back from our first new ground of the expedition. As our feet sank into the subterranean swamp, we admired the small white crabs and plodded our way on to dry land. As a nod to both the boot-filling mud and the opportunity we had been afforded to march down easy virgin passage, we named this part Fill Your Boots.

Returning to our campsite, Stuart and Lisa looked as if they had seen a ghost. Cave swiftlets are often present in Mulu's caves, their echolocating clicks providing the soundtrack to much of our time underground. Unfortunately, we seemed to have set up camp in the middle of one of their favourite thoroughfares and they were not best pleased. Their screeching and dive-bombing had been enough to evict Stuart and Lisa, who were now setting up another, far quieter campsite, which of course we called Swift Retreat Camp.

On the day of the big push, we were away early and soon making progress down Justamile Passage. In classic Cobweb Cave fashion, much of this was through a section of cave of huge proportions, so it all looks easy on the survey, but with numerous large blocks to clamber over, steep slopes to climb or traverse, and several pitches. There were also four boulder chokes to pass through before we reached Outrageous Junction. Four years ago, Diane Arthurs, Simon Cornhill and Mark Sims had bolted up a pitch in here and found over 1km of roomy new stuff, which they named Sceptics' Contrition. At the end of a long trip, their batteries drained, they had turned back, leaving big passage continuing into the distance. We knew this was one of the most promising leads in the area, so our enthusiasm was high as we carried on through this impressive find, clambering over more boulders, past a civet skeleton, and eventually, about eight hours after leaving our underground camp, we reached the frontier of the known universe.

The unknown beckoning darkness began in the same vein as the previous kilometre of large passage, winding over blocks – first to the left, then after we passed an alcove, we wound to the right and were on a slope heading towards a huge empty space. The slope was becoming steeper and steeper, and the dimensions of what lay ahead of us were so unexpectedly grand that it took us a while to comprehend what exactly we were looking at. Intersecting Sceptics' Contrition, a big, big place by anyone's reckoning, was a far larger passage. Other than drips from the ceiling and small puddles, the main cave passage had been dry until now, but below us was a wide, meandering river. At last we were looking, unexpectedly, upon the mysterious river of Cobweb Cave.

In 1754, Horace Walpole, the fourth earl of Orford, in a letter to his friend Horace Mann, coined a new noun, serendipity. The word shared between the Horaces was influenced by The Three Princes of Serendip, a Persian fairy tale in which the heroes 'were always making discoveries, by accidents and sagacity, of things they were not in quest of'. A mere 270 years later, following accidents and with perhaps some sagacity, we princes and princesses, standing on the shoulders of those giants who had pushed Cobweb Cave in previous years, made a discovery of a thing we had not dared to dream we might be in quest of: Serendipity River Passage.

We now had three hugely promising leads to investigate: the continuation of Sceptics' Contrition on the opposite side of the river, of similar dimensions to the passage we were in currently; and both upstream and downstream in the river. This looked like enough to keep us busy.

Figure 59: Tim Allen, Will Yu-Pearson and Chris Scaife in Serendipity River Passage. Photo Mark Burkey



To enter the river passage, we rigged our rope from a solid boulder in the floor and descended a sloping pitch. This descent would probably have been perfectly walkable until the last three or four metres, at which point we reached an overhang and then dropped down into the knee-deep water. When going from dry passage into wet, however much of a gnarly caver you are, there's usually some minor whimper, but after eight hours of hot, dry caving this felt like a foot spa. Not that any of us felt like stopping and relaxing here though – we had something more pressing to attend to.

It was a unanimous decision that we should head downstream first. As we left our rope and SRT kits behind, we were into a passage of dark limestone, with scalloping on the walls. The river was never less than 5m wide and the walls were generally about twice that distance apart. The ceiling was 15m above our heads for much of the way, occasionally lowering but never to anything approaching stooping height. The water was flowing at a sedentary pace, so other than occasional drips from above, the river passage was almost silent. As the depth of the water varied little, for most of the way we walked down the centre of the passage, enjoying the refreshingly cool water. For the few deep parts, we were able to traverse around the side with ease. There were few formations; some flowstone on the walls in places, a boulder shaped like a polar bear, but the beauty of Serendipity River Passage lies not in anything so garish as simple stalactites and stalagmites.

All four of us taking these first steps into the unknown were experienced cavers, with a combined total of over a century's caving experience, but this discovery was so wonderful that we could barely contain ourselves. When involved in digging or pushing underground, it's only natural for the mind to wander and I'm sure we have all at some point tried to imagine the best possible outcome for our project. Well, this was it – a river passage that seemed to go

on for ever, immensely enjoyable caving on a grand scale. This is what we went to Mulu for; this is what we go caving for.

Any plans along the lines of: 'we'll turn back at 2pm' were of course ruthlessly cast aside in the name of exploration. We wanted to make the most of this. Eventually, we reached a point where the ceiling lowered and the water deepened such that we would need to swim to proceed. Now almost 14 hours had passed since we had set off from our underground camp, so we decided this was the right place to turn around.

We slept well at Swift Retreat Camp, then Becka and I returned to finish off the survey in Fill Your Boots while Stuart and Lisa began the walk back to Camp Five. Our plan had been to spend the next full day resting, then head back up to Cobweb the following day, but as we sat carefully counting the days we had left in Mulu it was beginning to feel as though we might not have enough time to make the most of our three inspiring leads. By early afternoon on the day after our return to Camp Five, the four of us were of a consensus that our desire to go back to Serendipity and explore far outweighed any need to rest. So, we went back.

We set off from Camp Five at twilight and on our approach to the entrance we saw fireflies, a roosting rufous-backed kingfisher and a palm civet. After a night at our underground camp, we set off early for the long journey to our previous limit of exploration. We were faster than before and this time when we reached the front we split into pairs; Becka and Stuart went upstream, Lisa and I downstream for a swim.

As we dipped under the low arch at the downstream limit, we could see the passage continuing ahead with familiar dimensions. Soon we were walking again, never able to see far ahead as the passage twisted from one corner to the next, but everything felt encouraging. However, all too soon and as if from nowhere, we were faced with a blank wall. The river slipped silently into a sump, and however much we swam at it, hoping to find some barely perceivable airspace to allow us to carry on, our downstream exploration had come to an end. Who knows what that water does in the 2km or so between Serendipity's downstream sump and the Terikan resurgence? Perhaps an even better find awaits a future expedition.

Lisa and I returned upstream and found Stuart and Becka on the slope leading into the westward continuation of Sceptics' Contrition. This meant they must have found the upstream sump so, with their blessing, I had a quick scamper against the current. The dimensions and meandering nature of the passage were equal to those downstream, as was the sudden appearance of a blank wall and silent sump. I was thus back with the others in no time at all and we all pushed on into the dry passage together.

Swiftlets were here in abundance, presumably having reached this point through an entrance that remains undiscovered. Once up the slippery slope, we turned left into spacious, boulder-strewn walking passage and felt we could well be about to find a dry bypass to the upstream sump. Things soon closed down, however, and we were into a crawl that petered out to a draughtless mud blockage. In a way, cave exploration always ends in disappointment, as the final point of our discovery must, by definition, mean that no more is to be discovered. It did feel this way at the time too, that we had three excellent leads and they all ended far too soon. But now that I look back on our time in this section of cave, I feel only joy at our great find.

Serendipity River Passage was undoubtedly the main find of the expedition, but there were of course several others of note. Woodpecker Cave, which had been entered by Pete on New Year's Day, contained a spectacular chamber and proved to be 160m long, mostly walking passage. By pushing through a constriction near FFS Chamber, en route to Serendipity on the day of our photography trip, Loz, Becka and Stuart entered 200m of impressive passage that they named Dutch Rudder.

While Becka, Stuart, Lisa and I had been in Serendipity, Tim, Loz, Mark and Will descended a long, sloping pitch over enormous flowstone ramps into a calcite choke with extraordinary speleothems. See also the front cover photo [of Descent 297 and back cover of this report] for an idea of the beauty of Peaches and Popcorn, as it was named.

On the southeast cliffs of Gunung Benarat, a sizeable patch of darkness had been noted a number of times in the past and had been a focus of Mulu Caves expeditions since 2015. Despite these many attempts to investigate, with an approach through dense jungle and a difficult climb up loose rock to an invisible target hidden by the bulging crag, the site had not yet been reached. A concerted effort on this expedition – mainly by Tim, Will and Mark – with Frank spending days on end seeking out vantage points with his binoculars, to offer directions via walkie-talkie, meant that Corner Cave was finally reached. Our expedition T-shirts had mockingly referred to this hole as 'Frank's Alcove', but we all hoped it would lead to glory – it was, after all, an entrance into a blank area of limestone on the same line as Gua Nasib Bagus (Good Luck Cave), home to one of the largest enclosed spaces in the world, Sarawak Chamber. In the end, when Tim and Will finally entered the promised land, they found a mere 68m from the overhang to a complete blockage.

I suppose that's the nature of cave exploration: you never know what's around the next corner. Sometimes years of hard work leads to an alcove and just occasionally, with relatively little effort, you make serendipitous discoveries of grandeur.



Figure 60: Will Yu-Pearson in Serendipity River Passage. Photo Mark Burkey







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We are grateful for the support of the Ghar Parau Foundation, the Mount Everest Foundation and Spanset Ltd.

Following the expedition, our photographs and reports appeared in Descent magazine, on the UK Caving forum and in various forms of social media.

Tim Allen spoke about the expedition at Hidden Earth, the UK's National Caving Conference; and Becka Lawson is due to speak about a series of expeditions, including this one, at the Petzl Underground Session at Kendal Mountain Festival.





the **MULU** Caves Project

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Front cover: Serendipity River Passage, Cobweb Cave - photo Mark Burkey

Rear cover: Peaches & Popcorn, Moon Cave - photo Mark Burkey

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