

RCGS Expedition Report - Raspberry Rising Expedition

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Team members

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Initial idea

The idea came from discussions with Mike Boon in 2007, who mentioned his attempts to explore this cave system in 1972 and 1981. Mike encouraged me to make an attempt at this cave system.

Cave system

The cave system currently contains two unconnected caves (Raspberry Rising and Cavegone) and two sinks (Tupper and Dyegone). Raspberry Rising now contains 2,921 metres of mapped passage and a vertical range of 217 metres.

Begin of the expeditions

This project has taken place over a number of years. It began with the permit application process with Glacier National Park of Canada to enter and explore this cave system.

On Feb. 2, 2012, I did a solo climb of the waterfall, which had stopped all previous attempts I knew about. I rigged the waterfall and sump, which would allow future team members safe passage to map and explore this cave system.

In the first winter, Charles, Adam, Jeremy and I mapped well over one kilometre of large, beautiful marble passages. We recorded and observed a few insects and a plethora of calcite formations. We determined a path forward through sump 2, an unexplored and unexpected underwater passage, and the cave was de-rigged for the summer

That winter also brought cold temperatures, which subdued the torrential river spewing from the cave's mouth. We had partnered with Thompson Rivers University to study the microbial life in this newly entered ecosystem. We pushed through sump 2 and began climbing again through the exploration of the upper passages. Our progress was halted by sump 3. We placed the microbial sampling equipment, and collected temperature readings and soil samples.

Exploration of the streamway was difficult at times. We had to snowshoe or ski up to the cave in the legendary Roger Pass. We then changed into wet suits, donned our dive kits, and slipped into 3 C water, moving through the canals. Upon surfacing, we warmed up by climbing numerous cascades and waterfalls, as well as wading through pools of glacier water and hopping across boulder fields. Just as the heat returned to our bodies, the team crawled through a narrow, short underwater section of the sump 2 passage. After more cascades and waterfalls, the mapping began. We would continue until either we were hypothermic or time ran out, at which point, we retraced our steps back to the surface.

In January 2013, the team left Petri dishes with two types of agar in predetermined locations throughout the cave, to be collected three months later. By the beginning of May, the water was rising and we needed to collect the Petri dishes. The plan was to push sump 3, de-rig, and collect the microbial collection plates over two days.

On the first day, we headed to the far end of the cave, carrying equipment up to sump 3. On arrival at the sump, we found there was no air in sight – just a large passage descending down a gravel slope into darkness. I donned the dive equipment, belayed the diveline, and gave the team my return time. Slipping beneath the surface, I made my way through the sump. The sump was short and wide, and I reached the surface. Ahead lay a large walking passage. Tying off the diveline and removing the dive equipment, I carefully moved up the passage.

After a distance, I came upon an unexpected obstacle: another sump. I kitted up, belayed the diveline, and squeezed through the narrow opening into sump 4. Soon, the passage became large. Not having much line, I swam to the end of the reel, not seeing any air. Floating there, staring into the dark water ahead, I thought this was a game changer. I returned to my team members with the news of what lay ahead. On our way out, we de-rigged the passages down to sump 2.

The next day, we returned to the cave system to collect the microbial samples, which were sent off to Thompson Rivers University. (Testing results from nine cave isolates showed antimicrobial activity against MDR-*Staphylococcus aureus* and seven against *Micrococcus luteus*.)

Returning to the sumps

In September 2013, Kathleen, Charlene, and I returned to the cave to leave some equipment beyond sump 1. As the cave was still flood-prone, we didn't return for a few weeks.

On Thanksgiving Sunday of 2013, we returned to the cave system, re-rigged to sump 2 and set up the equipment we would need to push to sump 4. By Monday, we were in a position to climb into the most promising lead to potentially bypass the upstream sumps. We made great time out towards the lead. Unfortunately, on the way, I cut my hand open. Seeing tendon, torn flesh, and blood, it was obvious I need stitches and we left.

Two weeks later, with my hand healed, we headed back. Our first goal was the lead we were to explore when I cut my hand. Kathleen aided up the blank wall, with Christian belaying. Once up, the passage quickly ended in a collapse. We mapped the passage, then began focusing on the leads near sump 3. This involved passing sump 2. During the journey, Katie and Gavin pushed a collapsed boulder pile to discover a large fossil passage beyond. We tried to push the upstream leads we found there, but to no avail.

We shifted our attention to sump 4. On the first attempt, I slipped into the murky water of sump 3, where I could only see 50 centimetres ahead. Upon surfacing from sump 3, I realized that my drysuit was leaking. I continued up to sump 4. When I arrived in sump 4, I saw the water was brown, though it had been clear the last time I was there.

I found a good anchor for the diveline and squeezed backwards into sump 4. I was in the main passage, but had to turn 90 degrees. A search revealed no good line belays. Reeling the line back in, I grabbed a

large rock from the surface, dragging it back under to act as the belay. With zero visibility, I secured the diveline to the rock and began making my way through the murky water, searching for the reflective mirror of the surface. A back up light died. I continued looking for the surface or a line belay. At 35 metres, I thought I saw a belay, but as I grabbed at the passage floor, the walls revealed nothing. This sump's length was greater than the rest. The cold water leaking into my suit was becoming too noticeable, so I stopped. Too many things were not in my favour.

I checked my air, which was still above my turning point. I dug a hole in the sediment floor and buried the reel. I decided I would come back in better conditions with better gear. I retraced my path until I squeezed to the surface. Continuing down the passage, I returned through sump 3 in a mild state of hypothermia.

Next steps

With the start of the winter permit system, we have to move back to reactionary exploration techniques. This will include snowshoeing or skiing to the cave entrance; crossing and moving up through avalanche slopes; racing to get our objectives done; and getting back to our vehicle before midnight each day.

Unfortunately, the passages beyond sump 4 have not been breached. There will be a short window in the spring to explore them as the waters begin to rise. This winter, we will concentrate on removing as many question marks between sump 3 and the entrance as possible, thereby adding to our knowledge of this system.

This cave expedition has the potential to spark more biomedical research. Early tests show that several bacterial samples collected by the expedition may provide new insights into the Strep bacterium.