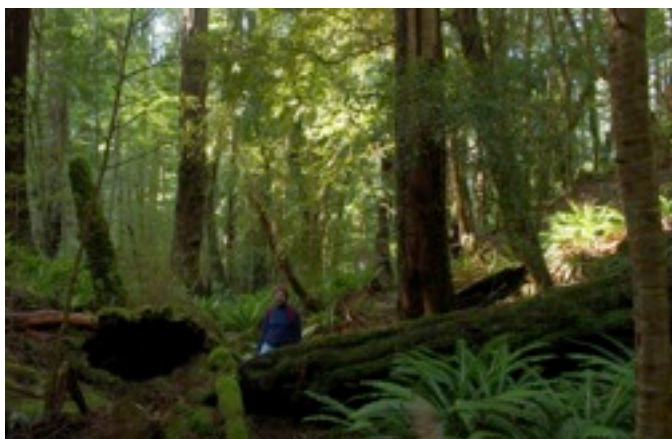


AURORA: A LARGE CAVE SYSTEM in the LAND of the TAKAHE FIORDLAND, NEW ZEALAND

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The remote Murchison Mountains area of Fiordland in the South Island of New Zealand is home to the last remaining wild population of the Takahe, a critically endangered species of flightless bird. The mountains also contain a belt of cavernous limestone of which the major feature is the Aurora cave system, the longest and most complex system so far located in the southern half of the South Island.



Marjorie Coggan walking through Beech forest en route to the cave
Photo: John Brush

Aurora is the inflow end of an extensive (8 kilometre) network of passages carved by the Tunnel Burn. This stream starts as the outflow from Lake Orbell, plunges underground on reaching the limestone and ultimately emerges some 260 metres lower where it flows into Lake Te Anau through Te Anau-Au Cave (Cave of the Rushing Waters). This latter cave is a 200 metre stream passage that has been developed as a show cave by Real Journeys and which is now commonly called the Te Anau Glow Worm Cave. It is separated from the rest of the Aurora Cave system by a sump.

The Takahe (*Porphyrio hochstetteri*) had been sighted only rarely in the latter part of the 19th Century and during the first half of the 20th Century, it was generally considered to be extinct until being rediscovered in the Murchison Mountains in 1948 (Department of Conservation (DOC), 2014). A survey at the time indicated a population of about 250, which has since fluctuated between 80 and 200 adult birds, according to Wickes et al, 2009. Soon after the discovery, a 500km² Special Protection Area was set aside with stringent access provisions. This area, bounded to the west by rugged mountains and on the other 3 sides by Lake Te Anau, is like an island in some respects and this influences how the area is managed. The access



Top. Takahe
Photo: DOC/ Glen Greaves
Bottom. In the forest just above the main entrance to Aurora Cave
Photo: John Brush



*Looking back to the main entrance of Aurora Cave
Photo: John Brush*

restrictions remain in place to this day and also affect access to the cave – and probably afford a considerable measure of protection to it. A DOC permit is required to set foot in the area beyond the show cave facilities and special precautions are taken to help prevent the introduction of new organisms.

In August 2014, Marjorie Coggan and I were fortunate to have been invited to visit the cave. The trip (and the appropriate DOC permit) was organised by Neil Collinson, the current ACKMA Vice President – New Zealand, and Real Journeys' Operations Manager for Te Anau & Manapouri. The other members of the party were fellow ACKMA member Laura Dawson, Cave Operations Supervisor with Real Journeys and Loren Hrynkewycz, a former employee of the company.

Neil offered to provide us with helmets and lights and, as overalls are not really necessary, all we had to bring were boots, gloves, knee pads, thermals, spare headlights and food. Not to mention cameras and a couple of flashes.



*What is around the corner? Marjorie Coggan
contemplating a low, wet crawl
Photo: John Brush*

Neil also arranged a water taxi for our early morning trip up the lake, but as the plan was to catch the Real Journeys cave tour boat back to Te Anau late that afternoon, our time to explore the extensive cave was limited. Nevertheless, Neil and Laura set out to show us as much of the cave as possible in the time available.

Aurora has several entrances on the slopes above the show cave. The main entrance is a one-hour walk from the show cave jetty. It is a pleasant up-hill walk through tall forest - mostly beech trees - on a spongy carpet moss and fallen leaves. Along the way we passed many wooden boxes that are used for trapping stoats. These introduced pests are the major predator of Takahe eggs, chicks and adults. Another major threat is Red Deer - also introduced - which browse on and trample the tussock grasses the Takahe eat and nest in. These are controlled by shooting.

The main entrance to Aurora is an imposing 40 metres wide and 5-10 metres high. It sits on one side of a leafy depression (a collapse doline?) which has a marked track leading across it and down into the cave. This is



*Loren and Neil negotiating a stream canyon in The
Sewers
Photo: John Brush*



*Laura Dawson at Twin Falls
Photo: John Brush*



*Laura, Loren and Neil resting up for the trip back to the entrance (Note the excellent head protection Neil is wearing - Ed.)
Photo: John Brush*

intended to limit the area of visitor impacts and Neil was quite pleased with how the areas beyond the track are slowly revegetating. Even before we entered the cave, we could hear the roar of the underground stream, which sinks at a smaller entrance further up-slope. Most of the noise is generated by the Twin Falls, where the river plunges five metres or so, about 100m into the cave.

The walls and roof of the huge entrance passage are a cream-coloured, slabby Oligocene limestone approximately 30 million years old. The steeply inclined floor is a mix of breakdown slabs as well as silt, gravel and rounded igneous boulders that are remnant glacial deposits. Work by Paul Williams, the renowned karst researcher and ACKMA member, has revealed a complex history of passage development, ice and sediment blockages and subsequent partial removal of sediments in response to glacial and fluvial events on the surface. His studies suggest that during glacial periods the cave outlet was blocked by ice, and so the system was flooded by meltwater and became a sediment trap. Dating of speleothem material inter-bedded with sediments has enabled Paul to identify seven different glacial advances in the area over the last 230,000 years (Williams, 1996).

Not far beyond the Twin Falls area we left the main stream passage, climbed a sediment slope and then very quickly but quietly crawled under an evil-looking roof slab several metres across. A couple of years ago Neil noticed it had dropped several centimetres and informed DOC, which promptly closed off access to that part of the cave. As it appears the slab has stabilised in its current position, DOC is now permitting limited access, provided that visitors sign a liability waiver form and pass under the rock one-at-a-time. On the other side of the slab, the passage opens out into the Hall of Silence, where there are a few small patches of clean decoration. From there we wandered further down into the cave following small tributary streams through beautifully scalloped clean bedrock canyons, part of which is called the Sewer



*Neil Collinson about to get wet feet
Photo: John Brush*

System, and into a confusing area of abandoned stream passages called the Maze.

Although parts of the maze area were not depicted on one of the maps Neil carried – not that he needed to use one – he said it was easy to find the way out by remembering to turn right, left and left again at key passage intersections. The trick, it seemed, was to remember which were the key intersections. After a quick bite to eat we scrambled down to Juliet's Balcony where a side stream plunges into the main river passage. At that point, we were only about 200m horizontally and 50m vertically from the inner end of the show cave. However, as there is a sump separating the two caves, this snippet of information was purely of academic interest.

Sadly, there was insufficient time to drop down into the main stream passage for a closer look and any thoughts of returning upstream along the main river passage were set aside in view of the high water levels. So we simply retraced our route back to the entrance.



John Brush in The Sewers area of Aurora Cave
Photo: Neil Collinson



The elevated walkway in Te Anau Glow Worm Cave
affords nice views to the cascading stream
Photo: John Brush

As we made good time on the way back down the hill, there was time to have a quick look at a couple of other cave entrances and take in more of the magnificent forest scenery. Unfortunately we did not spot any Takahe during our wanderings, but Neil assured us that they can be seen in the area. In winter Takahe tend move down from the alpine tussock country to the warmer forest areas.

There was also time for a quick look at the show cave. We had last visited Te Ana-Au Cave in 2003 and it was interesting to see the recent improvements. In place of the short boat trip along the outer stream passage there is now an elevated walkway of aluminium alloy and

stainless steel. This has improved visitor management and enhanced safety. It has also enabled an artificial dam near the entrance to be removed, so that there are now good views from the walkway to the cascading stream where once there was a silent artificial lake. Lighting systems have also been upgraded and two independent emergency communication systems have been installed through the cave. In the Visitor Centre building, the new interpretation displays of local natural history are impressive and last, visitors are whisked back to Te Anau in the Luminosa, a large twin-hulled, 78-passenger vessel that completes the trip up Lake Te Anau in less than 30 minutes.

Just as well we were not late in returning from Aurora Cave as my GPS indicates the Luminosa left the cave jetty at 1600:00:01 hours, just one second after the scheduled departure time.

We are very grateful to our Kiwi friends, especially Neil and Laura, for organising the trip and for expertly and safely showing us through the cave.

References

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