

SOUTH WALES CAVING CLUB

BELIZE 2010

REPORT OF THE CAVING EXPEDITION TO THE TOLEDO DISTRICT OF
BELIZE, CENTRAL AMERICA
March – April 2010



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Abstract

The 2010 Belize expedition was the most successful undertaken by members of the South Wales Caving Club (SWCC) and other clubs so far. Building on the success of previous expeditions, further exploration of the Pueblo Creek cave was undertaken.

New finds continued to be discovered in the Tiger Cave system and further sites were discovered in the surrounding jungle area.

The expedition continued to build good links with the local communities that can be utilised on further expeditions to the area.



Ghar Parau Foundation



Introduction

This was the fifth expedition made to the Toledo District, since 2001, by members of the SWCC and individuals from other caving clubs. Each year the expeditions have gradually increased in size and achieved greater success with each year.

The 2010 expedition differed from previous expeditions in that accommodation and transport were greatly improved with the aid of a local contact, Bruno Kuppinger. Bruno provided excellent sleeping and food facilities that were a marked improvement over the less than pleasant conditions of previous years. This allowed all members to operate well rested and with full stomachs.

We have continued to endeavour to help educate the local villages on environmental and archaeological impacts of misuse of the local cave systems. Increased tourism and the on-going removal of cultural materials remain of great concern to the Belize Institute of Archaeology (IA) and a number of local village elders.

Due to the sacred nature of caves to the ancient Maya and the archaeological significance of caves in Belizean culture, the expedition was undertaken with permission from the IA on the understanding that any cultural material is noted, logged accordingly and reported back to the Institute.

N.B. As there were no trained archaeologists on the expedition, all details relating to archaeological finds are purely observations and intended for informational purposes only.

Expedition Aims

The primary aims of the expedition were as follows:

- Continue exploration of Pueblo Creek Cave, Pueblo Viejo with the goal of trying to connect to the known Ochochpec cave in the Aguacate Indian Reservation.
- Complete exploration of Tiger Cave, San Miguel, where further exploration has been enabled by the newly created Hydro plant which has lowered water levels within the cave.
- Complete exploration of Lagonita Cave, Rio Grande reservation.

Time permitting; the secondary objectives were as follows:

- Re-explore and survey 2 known caves at Mabel Ha
- Re-examine 'pit' and sound of water at Gibnut Cave, San Jose.
- Revisit area of Esperanza Camp, Rio Grande Reservation.



Picture: Aguacate Creek. (Brendan Marris)

Expedition Members

<p>Maxine Bateman</p> 	<p>Caver for 8 years, member of South Wales Caving Club (SWCC) and former Chairman of Council Higher Education Caving Clubs (CHECC) Expeditions to China and 2 Expeditions to Austria. First expedition to Belize.</p>
<p>Nicky Bayley</p> 	<p>Caver for over 25 years, member of South Wales Caving Club (SWCC) and Royal Forest of Dean Caving Club (RFODCC) West Brecon Cave Rescue Team (WBCRT) 2 expeditions to Northern Spain, 3 to Meghalaya (NE. India) Previous expedition to Belize (2008) Skills in underground video and photography</p>
<p>Alan Braybrooke</p> 	<p>Caver for 16 years, member of South Wales Caving Club (SWCC). Expeditions to Spain. 5 Previous expeditions to Belize (2001, 2002, 2004, 2006, 2008) Expeditions to Spain, France and Canada. Teacher of Outdoor Education Cave Instructor Certificate (CIC) West Brecon Cave Rescue Team (WBCRT)</p>
<p>Russ Brooks</p> 	<p>Caver for 23 years, member of Bradford Pothole Club (BPC) Expeditions to Ireland, France, Spain, Slovenia, Greece. Previous expedition to Belize (2008) Regular cave digger in both Yorkshire & Mendip. Experienced in cave surveying & photography. Upper Wharfedale Fell Rescue Association (UWFRA)</p>
<p>Toby Dryden</p> 	<p>Caver for over 30 years, member of South Wales Caving Club (SWCC). Soldier Development Instructor with the British Army West Brecon Cave Rescue Team (WBCRT) 3 previous expeditions to Belize (2002, 2006, 2008)</p>
<p>Rich Hudson</p> 	<p>Caver for 23 years, member of the Bradford Pothole Club (BPC). Expeditions to Mexico, China, USA, Europe. Previous expedition to Belize (2008) Qualified Cave Diver with the Northern Section of the Cave Diving Group (CDG). Assistant underground controller with the Upper Wharfedale Fell Rescue Association (UWFRA).</p>

<p>Brendan Marris</p> 	<p>Caver for 11 years, member of the South Wales Caving Club (SWCC), Experienced cave photographer Caved in UK, Ireland, Greece, Mallorca and Lebanon. Previous expedition to Belize (2008)</p>
<p>Clair Sansom</p> 	<p>Caver for 5 years, member of the South Wales Caving Club (SWCC). Soldier Development Instructor with British Army Digging exploration in Mendips. First expedition to Belize.</p>
<p>Phil Walker</p> 	<p>Caver for 15 years, member of South Wales Caving Club (SWCC) and South Bristol Speleological Society (SBSS). 4 Previous expeditions to Belize (2001, 2004, 2006, 2008). Expeditions to Spain and France.</p>



Picture: Team Photo, 2010. (Nicky Bayley)

Belize Overview

Belize, until 1974 known as British Honduras, is a small country about 280km long and 110km wide, similar in size to Wales. Lying on the Caribbean coast of Central America, it has Mexico to the north and Guatemala to the south and west.

Belize is a relatively low-lying country with a coastline of small cayes and the second largest coral reef in the world. To the north the country is flat as it extends to join the Yucatan peninsula of Mexico.



Map: Belize

In the centre of the country lies a granite massif, Victoria peak being the highest point at 1120m, formed before the surrounding Cretaceous limestone, then being responsible for the surrounding uplift, which has formed the Mayan Mountains where the main cave development is located. This mass of limestone along with the large rainfall, which chiefly occurs during the wet season, allows for a huge potential

of cave development. Unlike the Yucatan peninsula, that has received attention in recent years from cave diving expeditions, the landscape leaves a lot of potential for dry cave development. In fact it already contains the largest cave chamber in the Western Hemisphere; Belize Chamber, in the Chiquibul system.

The caves of Central America have played an integral part in Ancient Maya culture, seen as an entrance into the underworld and often the scene of ceremonies, burials and alleged sacrifice. For this reason many of the dry caves in the Belize area contain numerous artefacts and archaeological evidence so exploration is heavily controlled by the Belize Institute of Archaeology (IA).

Prior SWCC Exploration

The geology of Belize means it is well known as a caving destination. American and Canadian cavers have been active in the country since the '50's and there have been several UK expeditions, including two by Queen Mary College in '88 and '89 and one by Mendip caving Group in '94.

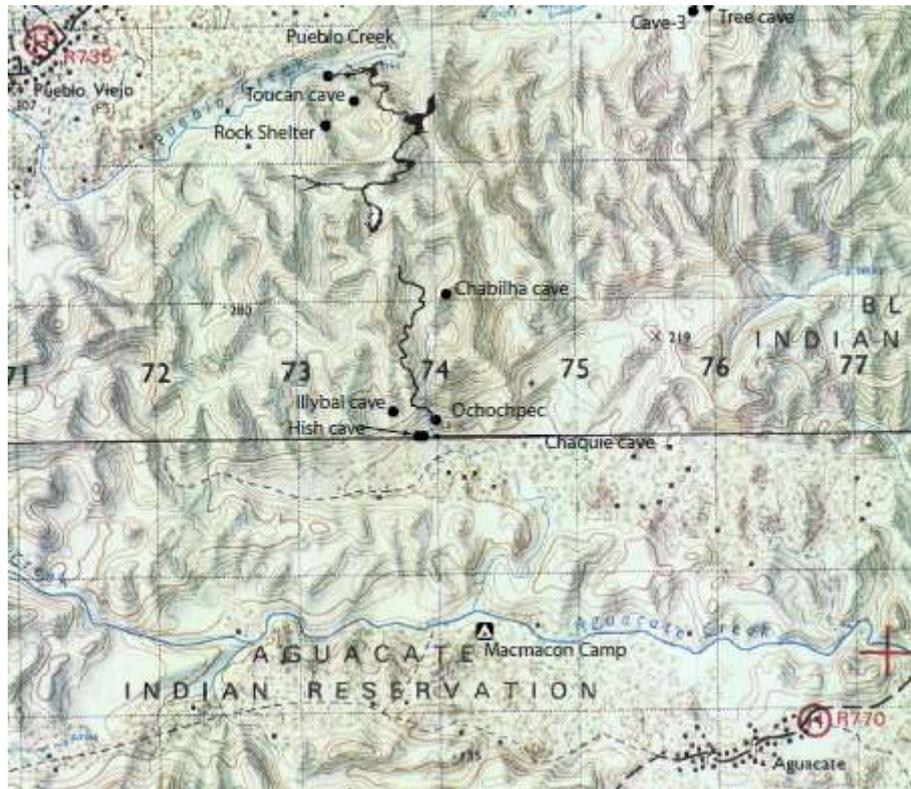
However, the bulk of caving exploration has been done in the Northern and Central parts of the country with the South (Toledo District) being sporadically explored and largely undocumented. It was for this reason in 2001 that we decided to base ourselves in this part of the country.

SWCC Activity

- **2001** - 3 cavers explored and surveyed several caves, between San Jose and San Pedro Columbia.
- **2002** - 5 cavers returned to area but only had limited success due to effects of Hurricane Iris, which had devastated the area shortly after the 2001 trip.
- **2004** - 2 members joined 3 other cavers based at the British Army (BATSUB) barracks, exploring several caves across the country.
- **2006** - 7 cavers re-explored and surveyed Champon Cave, initial exploration of Pueblo Creek Cave; explored to a log jam with continuing passage beyond. Lagonita Cave discovered. First attempt to get to Central River sink at Esperanza Camp, an area of large karst features.
- **2008** - 10 Cavers, Pueblo Creek explored to over 3km with on-going leads. In Tiger Cave the 'Roaring River' is passed and explored for 500m with leads on-going. Esperanza camp reached and various new leads identified.



Pueblo Viejo Area



Map: Pueblo Viejo & Aguacate areas with caves of interest marked.

Pueblo Creek Cave (GPS: *contact Institute of Archaeology*)

History

Although known to the locals for some time, the first systematic exploration of this cave was undertaken in 1982 by Logan McNatt and Tom Miller, when it was referred to as 'Flush Cave'¹. At the time exploration only reached the first chamber and a high level entrance series² used as an escape route in an unexpected flash flood.

In 2006 SWCC were directed to the cave by the Institute of Archaeology, in order to check some of the work being undertaken by Trekforce. The cave was pushed down through large river passage to an impassable log jam caused by previous high flood levels.

In 2008 SWCC continued exploration further into the cave and discovered the massive Lobster Chamber. The cave continued through more river passage with a number of unexplored leads.

¹ McNatt, L. (1982). Grim Fairy Tales. *Texas Caver* 27(4): 67-69. Account of flash flood during Miller and McNatt's initial exploration of Flush Cave (Pueblo Creek Cave).

² Miller, T. (2008). Personal communication, email describing the initial exploration of 'Flush Cave', Pueblo Viejo.

In 2010 SWCC continued exploration. Following the current limit of exploration, the cave was extended for approx. 1 km. The downstream continuation of the cave was pushed to a final sump pool of 60m x 30m in diameter. A number of smaller inlets were also explored and surveyed.

Following a line survey of the Ochochpec cave in the Aguacate area, which ends at a similar sized sump pool, the straight line distance between the caves, is approximately 390m. As hypothesized by Tom Miller³ it is almost certain that these two caves are hydrological linked, although a dry route between them remains elusive.

Location

Main Entrance:

From Pueblo Viejo an approx. 30 minute walk down the hill leads to the dry river bed (at the time of writing). Following the river bed downstream for approx. 15 minutes leads to an obvious rock arch over the river; the main entrance is visible approx. 50 metres ahead.

2nd & 3rd Entrances: (GPS: *contact Institute of Archaeology*)

From the main entrance take the obvious hole in the cave wall on the left hand side. Follow the trail for approx. 300 metres and then follow trail up to right. 3rd entrance encountered with a draft emanating; the larger 2nd collapse entrance is approx. 30 metres further on.

Description

Following the main river entrance a small pool is negotiated before a large collapsed jungle entrance is encountered. The best route is to climb up towards this entrance and then cross over about half way along before heading back down into the main passage. The passage continues until reaching a slippery climb down into a pool of water perched about the 15m pitch into the main cave. Ropes are required to enter the main cave, however a 10m climb up on the right leads to a high level series. The passage here is an old fossil series that leads back to a junction, right leading back to the 2nd collapse entrance and left and down leads back into the main cave, beneath the pitch.

From the pitch a large chamber leads over a large amount of flood debris to a large pool, filled with organic debris. The shallowest point is straight through the middle. The cave continues through large stream passage, before a series of swims are encountered. A 5m climb, requiring a rope or ladder marks the start of the swims. The section of swimming takes approx. 45 minutes and it is required to constantly climb in and out of the water. On previous years, log jams have caused parts of this section to require a climb up followed by abseils back down.

Eventually the enormous Lobster Chamber is reached. A small 'beach' marks the start of the Chamber. The most obvious route is to stay low on the right hand side

³ Miller, T. (2008). Personal communication, email describing the initial exploration of 'Flush Cave', Pueblo Viejo.

and follow the sound of water. It may take around 15 minutes to navigate across the chamber. At the end of the chamber a number of deep flooded pot holes mark the start of another section of swimming and wading, following an impressive piece of river passage. After another 30 minutes an inlet enters from the left hand side.

2010 discoveries

This inlet leads back for about 0.5km through some clean stream passage, before splitting into two passages, but both lowering to low airspace canals before sumping.

Carrying on in the main river a short 7m climb leads another 70m of stream way before first sump pool is reached. There are 3 possible routes around the sump but navigation can be difficult.

The best route is on the left hand side. However soon after re-joining the main passage a large 30m x 60m sump pool is reached. A route behind is a dry oxbow leading back, past some fine formations including the "Pagoda", to the main passage.



Picture: Pagoda formation, Pueblo Creek Cave. (Brendan Marris)

Cultural

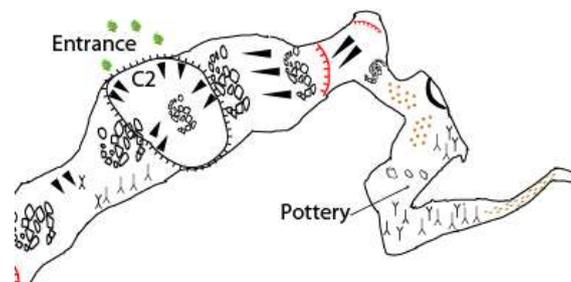
As an active river cave, it does not appear that much cultural evidence is present in the main part of the system. However, the upper entrance series, being dry and apparently untouched when the cave is in flood, **contains some remains of interest.**

From the second entrance the left hand branch of the passage leads to a small decorated grotto. On the left hand side of the chamber is a broken pot with a small handle still intact.



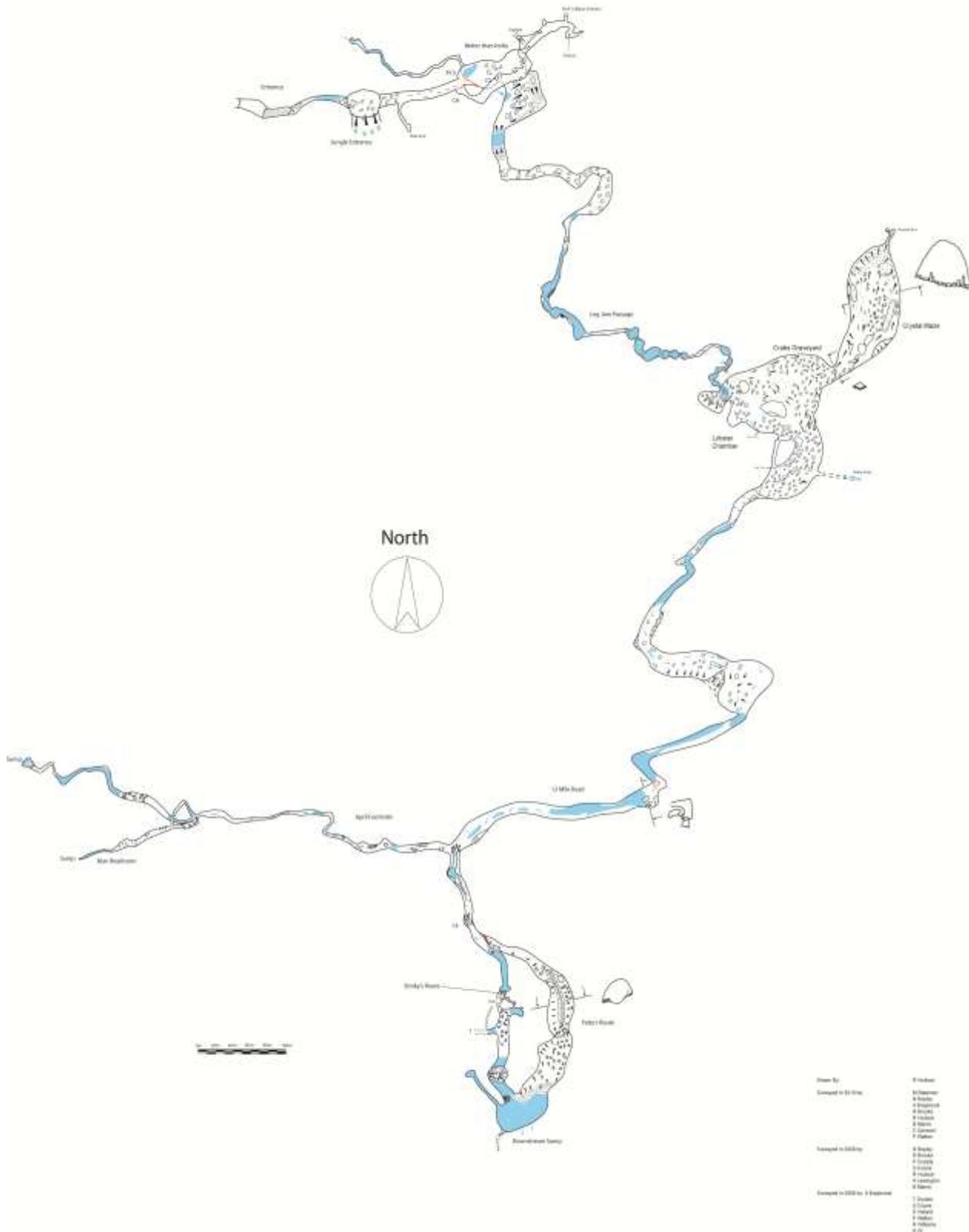
Picture: Handled pot, Pueblo Creek Cave. (Brendan Marris)

Close by on the right hand side of the passage it is apparent that more pottery is present but buried within the mud. This was left untouched.



Survey: Location of pottery, Pueblo Creek Cave.

Pueblo Creek Cave, Pueblo Viejo, Belize



Other sites of significance

No new sites in the Pueblo Viejo area were visited in 2010.

A few sites were visited on previous expeditions and although included in the 2008 report⁴, they are briefly repeated here for ease of reference.

Pueblo Quarry Cave (GPS: *contact Institute of Archaeology*)

Cave with small series of passages, approx. 200m in length

No cultural evidence was found. Cave is very close to well-known trails.

45 Minute Cave / Jaguar Print Cave / Pueblo Cave (GPS: *contact Institute of Archaeology*)

A series of impressive, medium sized, chambers. 20 metre pit at back of cave was descended and explored.

No cultural evidence was found. Cave is well known to locals and often used as a tourist destination.

British Army Cave (GPS: *contact Institute of Archaeology*)

Small crawl leads to a number of interconnected chambers, approx. 100m in total.

No cultural evidence was found. Locals referred to this cave as previously having a jade figurine and some large pots, the pots were removed, allegedly, by the 'British Army', the whereabouts of the jade figurine is unknown.

Toucan Cave (GPS: *contact Institute of Archaeology*)

Massive impressive cliff face contains large rock shelter, very old pottery present. There is a Mayan wall on the left hand side of the cave entrance. Low crawl through a boulder choke leads to a large impressive chamber,

Throughout the main chamber small piles of charcoal, possibly from incense burning or torches, were found.

Tree Cave (GPS: *contact Institute of Archaeology*)

100m+ network of low crawls

There is some evidence of digging near the entrance, but nothing of apparent cultural interest remains.

Rock Shelter Cave (GPS: *contact Institute of Archaeology*)

A very large cave, 50 m high but ends round the corner at a second entrance. There are some small pieces of pottery.

⁴ Braybrooke, A. (2009). SWCC Belize 2008. Account of the 2008 expedition by members of the SWCC.

Aguacate Area

Ochochpec (GPS: *contact Institute of Archaeology*)

History

This first documented and systematic exploration⁵ of this cave was undertaken by Tom Miller and others in 1979-80. The cave was explored and surveyed to a large sump pool approx. 2.2km into the cave.

In 2004 Trekforce entered the cave, believing it to be previously undiscovered, and called the cave "Machacon Connection".

In 2010 SWCC entered the cave, firstly to confirm that Ochochpec and Machacon Connection were one and the same cave and secondly to create a line survey in order to pinpoint the caves' location and direction in relation to the on-going exploration in Pueblo Creek Cave.

Location

Follow the track leading west out of the village of Aguacate. A track, approx. 1km along, on the right hand side is start of trail. Follow the most obvious trail and take right hand branch down to the old Machacon camp. The camp is located on the bank of Aguacate creek. Cross the creek and continue to another clearing on bank of dry river bed. Follow the dry creek upstream, until an obvious cave is seen on the left hand side. Follow this cave through the cliff for approx. 70m to shortcut some of the dry river bed. Continue up the dry river bed and at obvious trail on the left hand side exit the stream bed.

Trail continues through milpas fields and then descends down to another dry river bed. Ochochpec is the largest and most obvious entrance at the head of the largest dry river bed.

⁵ Miller, T (1981). Houses of Stone, *Caving International No 11*. April 1981.



Picture: Entrance to Ochochpec cave, Aguacate. (Brendan Marris)

Description

From the entrance lake a large passage heads off northwards, while a small side passage on the left, leads down 2 waterfalls to a sump pool. The pool can be bypassed and the main stream regained. The stream continues to emerge after a few hundred meters downstream at Bat Cave (*Stuz Cave*).

Back in the main passage further swimming and wading for 500m leads to a boulder choke. The way on is over the top which emerges on a large chamber, a difficult scramble down on the west side of the chamber brings you back into the main stream way where the passage continues northwards for over a kilometre until the sump pool is reached. The sump pool is approx. 30m x 60m and is noticeably similar to the current terminal sump pool in Pueblo Creek Cave. The distance between the 2 sump pools is 380m, most likely totally submerged.

Cultural

No cultural evidence was found. The cave is the main resurgence from the Pueblo Viejo area and takes a tremendous amount of water in wet season. Deep pools and lakes require long periods of swimming immediately on entering the cave, so it is not thought much cultural material would have been carried into the cave.

Chaquie Cave (GPS: *contact Institute of Archaeology*)

History

The first obvious documented reference to this cave, using the name 'Chaquie', comes from a 2004 Trekforce report⁶.

In 2010 SWCC entered the cave and explored the undescended pits at the limit of previous Trekforce exploration. A line survey was completed and confirmed that the cave trends for approx. 1.5km in a westerly direction.

Location

See location details for the Ochochpec system. Chaquie cave is the obvious entrance west along the smaller dry river inlet on the way to Ochochpec.

Description

The cave consists of a large canyon passage, with sections of deep canal, which often involve swimming. Large sections of the system have wonderful flowstone formation up to 20m in height.

After about 500m a route on the left narrows and becomes muddy before enlarging. The passage continues in a Westerly direction before more obvious water worn series of passages are encountered. At the downstream end is a clear sump, probably free diveable. A little further back a 15m pitch drops into a short section of fast moving stream way, which sumps in both directions.

Cultural

There was no obvious cultural evidence. However, bare footprints in mud banks were noted approx. 1km into the cave. It was not possible to determine if these were modern or of a historical nature.

The cave appears to possibly be an overflow for a major subterranean river system and would generally only be accessible in dry season. Swimming is needed almost from the cave entrance so it is not thought much cultural material would have been carried further into the cave.

Other sites of significance

Jaguar Cave (*Hish Cave*) (GPS: *contact Institute of Archaeology*)

A few meters northeast above Chaquie cave is another large entrance, which descends down over easy boulders into a flat sandy passage.

There is **evidence of Mayan occupation** as a small number of broken pots were discovered in 2004 by Trekforce. The total length of the cave is 75m.

⁶ Rhodes, C. (2004). Trekforce Blue Creek 2004. Account of the Trekforce work undertaken in the Blue Creek and Rio Blanco areas.

Outlook Cave (Illybal Cave) (GPS: *contact Institute of Archaeology*)

From Jaguar cave the trail leads via a short climb on the right steeply up the fall line to arrive after 15 minutes at Illybal cave.

The cave consists of a single dry passage 5m high and 3m wide and is approx. 30m in length.

In 2004 Trekforce reported **evidence of Maya occupation** in the form of broken pots found inside the entrance.

Crystal Cave (Chabilha Cave) (GPS: *contact Institute of Archaeology*)

Explored by Trekforce in 2004, the entrance to this cave is 15m high and 20m wide with a **large section of Mayan walling still** in place.

A large passage descends to reach a flat floor in a chamber. In the bottom of the chamber a crawl leads to a series of sub chambers

There is **much evidence of the Maya** in this cave.

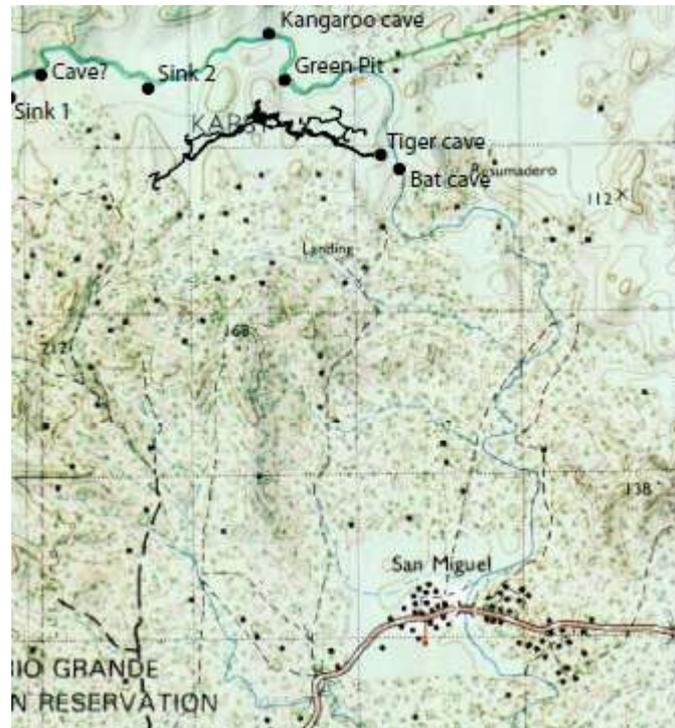
Mayan Wall Cave (GPS: *contact Institute of Archaeology*)

On the way to the previously mentioned caves in the Aguacate area, the trail takes a shortcut through a cave and emerges further up a dry river bed. Above the cave is an obvious entrance with a **Mayan wall** clearly visible. In 2010 the rock face was scaled and the cave entered. Unfortunately, despite the difficult ascent to the cave it appears it was either empty or had already been looted.



Picture: Mayan Wall Cave, Aguacate. (Brendan Marris)

Rio Grande Area



Map: Rio Grande Area with caves of interest marked.

Tiger Cave (Tich Hulz) (GPS: *contact Institute of Archaeology*)

History

In 1979 the cave is discovered and entered by members of the US Peace Corp.

In the years 1985-86 the cave is systematically explored and surveyed by members of the "NSS Rio Grande Project". Main dry cave is explored to conclusion, side passage explored to underground river, "The Roaring River".

In 2006 Hydro Maya build a hydro plant at the mouth of Kangaroo Cave, seriously altering water courses and lowering the previously inaccessible Roaring River section, within Tiger Cave.

In 2008 SWCC enter the Roaring River section and explore upstream and downstream, extending the cave by 0.5 km.

In 2010 SWCC explore a new entrance, called "Green Pit", entering upstream of the Roaring River, enabling a through trip. In addition the 'Roaring Pit' section was entered, discovering a second stream way trending away from the main cave.

Location

Follow the road from San Miguel to the Hydro Plant. Take left hand turn at obvious junction and continue downhill. Tiger Cave is obvious entrance across the river from the plant.

Description

The main entrance has 2 possible ways in, either low on the left hand side, or a climb up on the right. Both ways meet up in the main cave. A large passage continues until a jungle skylight is encountered. Immediately after the skylight the section with 'steps', is reached. Climbing up to the right leads to a platform overlooking the cave. Down and to the left is the way on into the main cave. The cave continues in a large impressive passage before an obvious mud slope down to the right marks the start of the route to the Roaring River section. Staying high and left continues in the main cave, past the Roaring Pit section on the left. Another large skylight entrance is reached.



Picture: Flowstone in Tiger Cave. (Brendan Marris)

The main passage continues to meet the 'Horsehead Room' where two possible routes are available. To the left a smaller series of passages leads via the 'Calcite Ice' section before connecting with 'The Slide'. Straight ahead at the Horsehead Rooms is the easy option and soon leads to the second jungle entrance and an obvious large muddy climb is the way on.

At the top of the climb the large impressive 'Belikin Room' is reached. Staying high in the chamber leads to a second large chamber, the 'Mayan Temple Room'. Down and left here leads to the 3rd jungle entrance and to the right leads to the very impressive 'Crab Shell Room'. These chambers contain some pottery remains.

Back in the 'Belikin Room', the route on is down and to the left, meeting up with 'The Slide'. The cave narrows before an obvious climb up 'Docs Didn't Go', with a hand line in situ, leads to a gour pool. A short low section soon opens out into 'The New Frontier'. The main passage continues with impressive dimensions. A crawl to the

left leads to 'West Virginia Passage and another chamber, 'The Milk Room'. The main 'New Frontier' passage continues before lowering into more shattered water worn rock and an obvious junction 'Jump Off'. Right at the junction leads back to the Milk Room and down leads to a small network of water logged passages. Climbing up at the junction leads to the muddy 'AA Survey Passage' before spitting with the main right hand route leading to the upstream sump.

The Roaring River section is a section of long water passage requiring long periods of swimming. At the end of the swims a duck under flowstone is followed by a 5m climb down into the main stream way. The once wall to wall white water is now significantly reduced and it is possible to traverse upstream and downstream. Downstream leads via a more water logged passage before splitting. The left hand branch leads to the downstream sump and the right hand branch leads to some more swims heading back in the direction of the main cave. Upstream leads to a further climb before connecting with the newly discovered Green Pit entrance series.

2010 discoveries.

The Roaring Pit section is a 15m climb down to a pool. A wade through the pool leads round the corner to a small chamber. There is a route high up on the left and one down to the right. Following the route to the right, a low airspace swim though a fast moving stream way is encountered, from the other side of the airspace a climb out leads to a large chamber with 2 main ways on. To the right the stream way is re-joined with an upstream sump encountered approx. 50m further on. A smaller inlet is encountered further downstream which extends for approx. 100m via some canals to a low airspace duck that closes down.

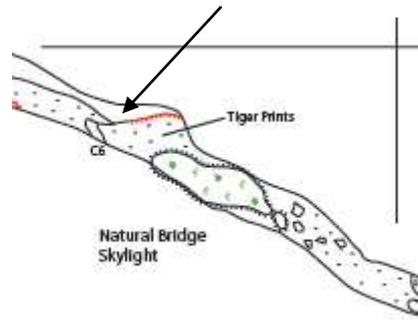
The main way on from the large chamber is straight ahead. A large passage for 200m continues until a silted passage is met which may need to be excavated. The passage leads to a cross rift with a small upstream sump and a final muddy crawl to a low draughting passage with the sound of bats in the distance.

Taking the high level route left at the large chamber another route upwards, leads back to the initial high level route seen in the first chamber. However, carrying on the stream way is encountered once more, with some large deep sump pools but no apparent way on.

Cultural

Despite the cave being used as a popular tourist destination there is still some **cultural evidence** present in the cave.

Near the entrance to the cave there are a number of 'steps' carved into the side of some calcite flowstone. These steps lead approx. 5m up a slope to a platform overlooking the main cave. Numerous pottery shards have been found at this location, although the amount has reduced throughout the years, probably as a result of an increase in tourist type trips to the cave.



Survey: Location of 'steps' and pottery shards, Tiger Cave.

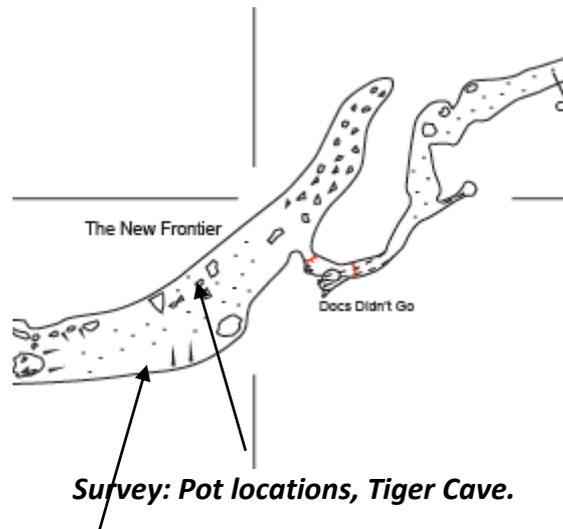


Picture: Pottery shard and 'steps', Tiger Cave. (Phil Walker)

Towards the back of the cave there are a number of impressive pots hidden in alcoves. One pot in particular, approx. 2ft in diameter, is still largely intact, but with what appears to be an obvious hole created in the side. Due to the remote location of these pots, it is believed that a second entrance was probably nearby, but subsequently collapsed. The location of these pots means they should remain inaccessible to the average tourist for the time being.

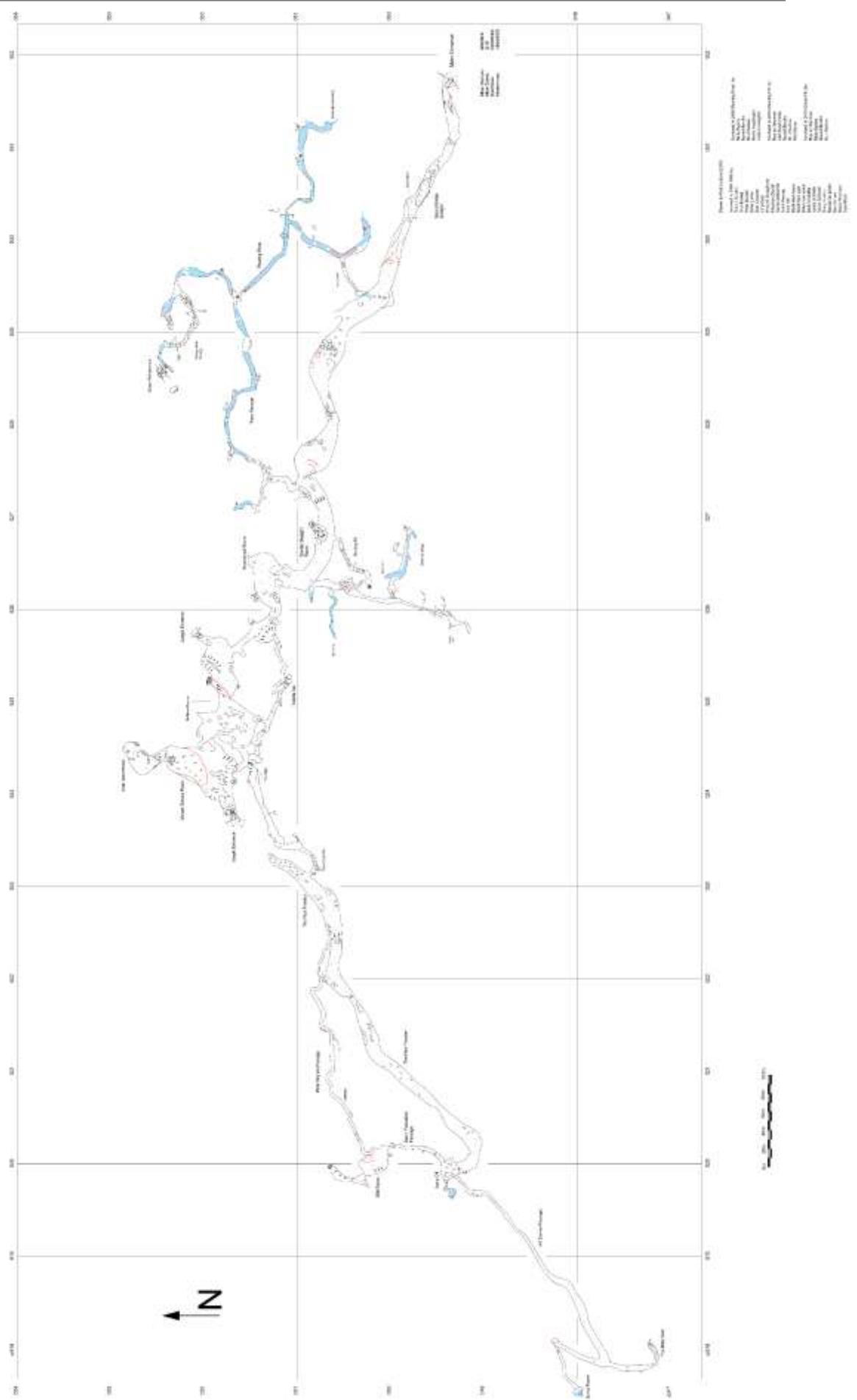


Picture: Pot, Tiger Cave. (Nicky Bayley)



Survey: Pot locations, Tiger Cave.

**TIGER CAVE
TOLEDO DISTRICT, BELIZE**



Green Pit (GPS: *contact Institute of Archaeology*)History

In 2006 SWCC find sink hole downstream of Kangaroo Cave but are unable to progress further due to flood debris.

In 2010 SWCC explore 'Green Pit' and connect to the upstream section of the Roaring River series of Tiger Cave.

Location

Follow the road from San Miguel towards Tiger Cave; at the turning for Tiger Cave continue up the hill and past the houses on the right. Follow the road along the side of the canal until an obvious dry river bed with large collapse area is encountered.



Picture: Entrance shake hole to Green Pit. (Nicky Bayley)

Description

Dry river bed leads to a large collapse area. A climb down on the right had side leads to a further climb up to the right into a draughting hole. A short drop down leads into the upstream section of the Roaring River series of Tiger Cave.

Cultural

No cultural evidence was found. The cave is an active inlet into the Tiger Cave system.

Kangaroo Cave (GPS: *contact Institute of Archaeology*)

History

In 1986 “The Rio Grande Project” expedition explores and surveys the cave.

In 2006 the construction of the Hydro Maya hydro plant alters water courses round the area and the water, resurging from Kangaroo Cave, is used to power turbines situated at the mouth of the cave.

In 2008 SWCC visit the cave but are unable to explore the system through the normal entrance due to the increased water levels within the cave and the danger of underwater turbines at the entrance pool.

Location

Since the construction of the Hydro Plant it is now possible to drive nearly all the way to the site of Kangaroo Cave. Follow the road from San Miguel towards Tiger Cave; at the turning for Tiger Cave continue up the hill and past the houses on the right. Follow the road along the side of the canal until the end.

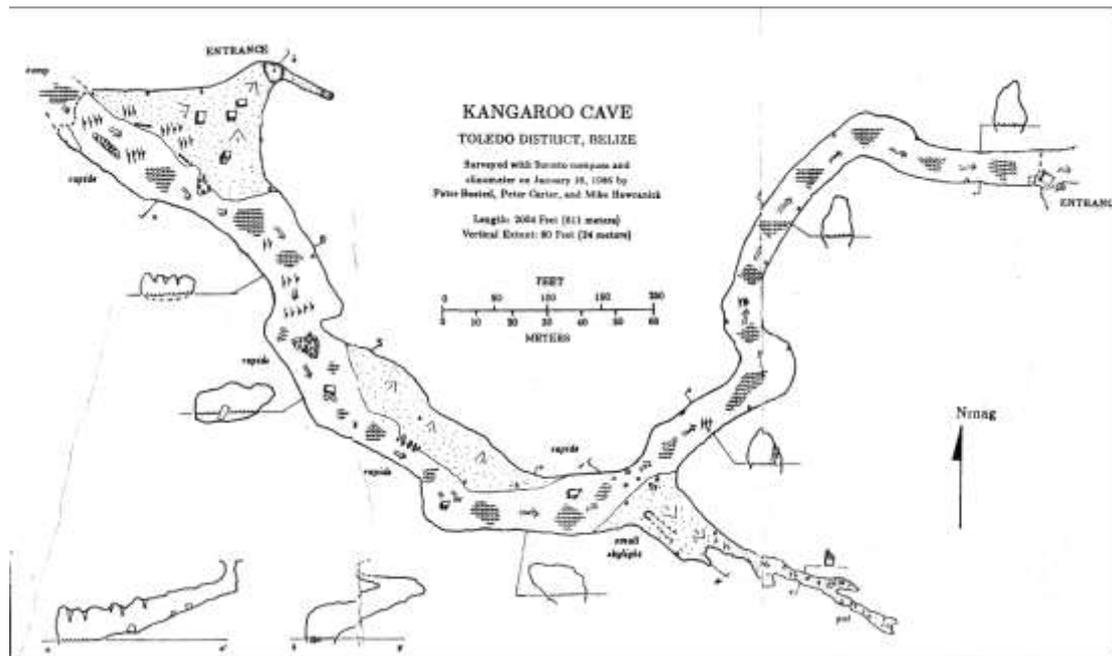


Picture: Kangaroo Cave in 2010. (Toby Dryden)

Description

A detailed description of the ‘original’ state of the cave is not readily available, but in general the cave is approx. 600m long with a stream way active throughout the cave. A second entrance further into the jungle, enters the cave just downstream of a sump.

It is not known how the creation of the hydro plant has altered the cave.



Survey: Kangaroo Cave (1986)

Cultural

The initial US explorers **reported significant cultural evidence**⁷ and possible human remains⁸. However, following the construction of the Hydro Plant the cave is no longer accessible. The high water levels would suggest that any materials are now lost, but it is not possible to confirm.

⁷ Dougherty, P. (1985). Belize: The Rio Grande Project. *NSS News* 43(11): 329-334. Account of the 1984 and 1985 expeditions to Toledo District by the NSS.

⁸ Bosted, P. (2008). Personal communication, email with some details of the archaeological remains.

Lagonita Cave (GPS: *contact Institute of Archaeology*)History

In 2006 members of the SWCC expedition came across the cave during an epic return from an unsuccessful attempt to reach Esperanza Camp. Due to the condition of the party, the cave was only used as a watering source and no exploration undertaken.

In 2008 SWCC explored the cave down, beyond the permanent pool previously used as a water supply. Descending a pitch of 5m but were not equipped to explore the deep water encountered

In 2010 SWCC continued the exploration crossing the canal and climbing up into a series of passages which eventually led to two large and well decorated chambers. A clean sump was located but no dry ways were located.

Location

Close to the Tigres camp in the Rio Grande Reserve and used the local water source. Follow the side stream up to this resurgence entrance

Description

From the entrance there is a small pool, well visited by gibnuts and jaguars. Passage is followed for 10 minutes until the water source is found on the left. Just past this a climb of 3m is descended but this is soon followed by a pitch of 4m to water level. Swimming across 'Bat Canal' to a difficult climb of 4m, located in the back left of the chamber allows access to a high level of passages.

Initially 'Brown Chamber' is encountered with fine formations and cave pearls, up the slope to the left. The way on crosses the chamber lower and to the right, passing through a low area of stall to join 'Recluse Chamber'.

This is very high and there could be further ways on but no ways of scaling the loose walls were possible. A resurgence sump was located to the left.

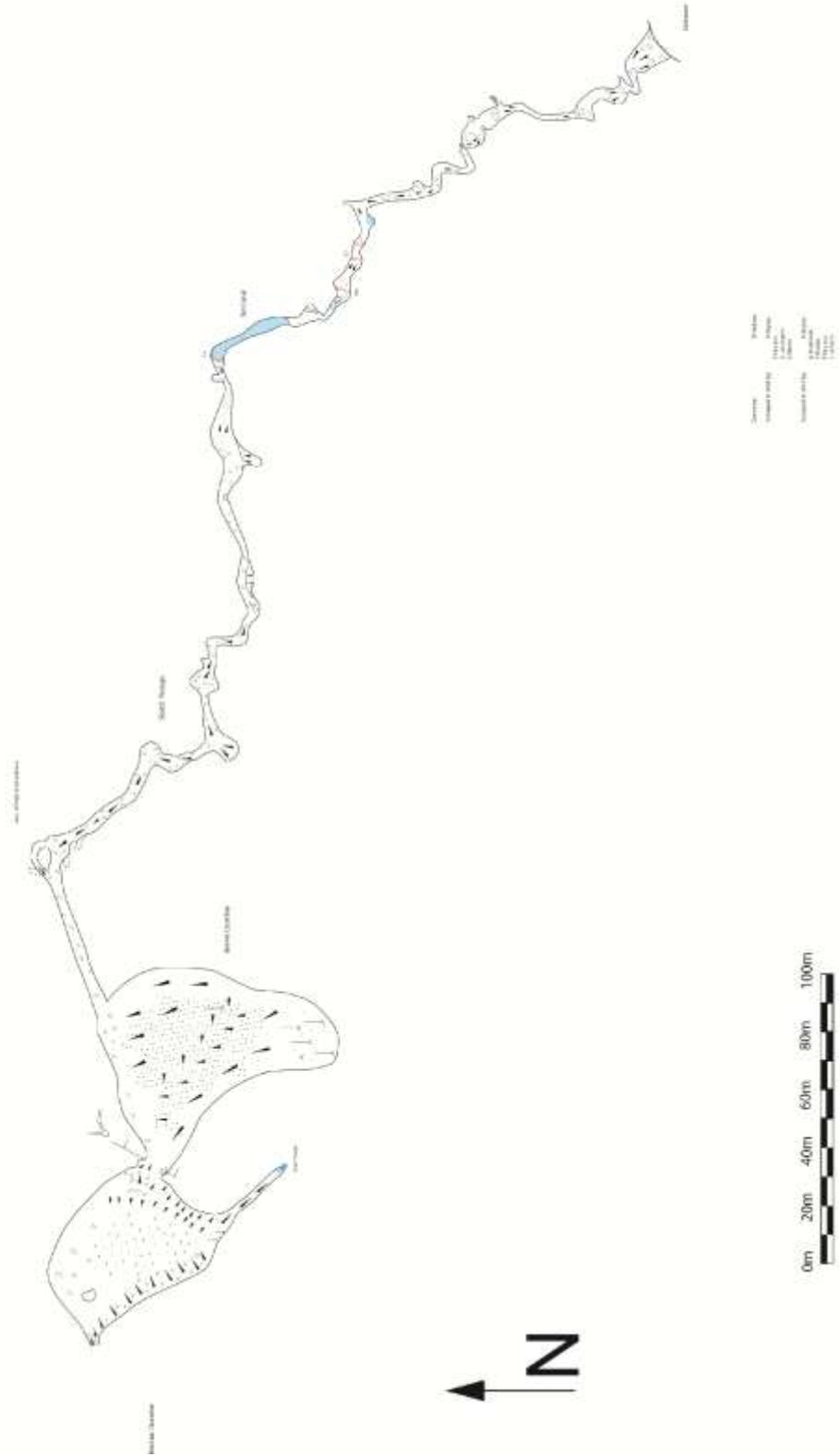


Picture: Stream way in Lagonita Cave. (Nicky Bayley)

Cultural

No cultural evidence was found. The cave is an active wet season resurgence but also well used by locals travelling through the area

La Gonita Cave, Toledo District, Belize



Ramon's Cave (GPS: *contact Institute of Archaeology*)

History

In 2010 SWCC entered the cave and explored for several hundred metres without completion. It was apparent that the first part of the cave had previously been explored, possibly by equipped cavers. An apparent previously unexplored way on, deeper into the cave, was found.

Location

The stream crosses the main trail above Champon Cave, with the cave only about 50m away, our teams must have walked past it on at least 5 occasions.

Description

A large entrance leads into a wide passage, 10m wide, 4m high well coated with silt mud and large lumps of wood. About 100m in on the left a small draughting passage, leads to two pitches 6m then 4m, eventually to a stream way 10m wide and 5m high, clean washed with plentiful fish, followed about 100m in each direction, ONGOING. A further 50m the passage divides, the left fork stays high and continues to a muddy sink, pitches have been found descending into a large open space, ONGOING. Continuing along the main passage at the fork, it descends gradually until a large chamber was entered, here there was evidence of the water sinking in several locations but no way on was found.

Cultural

No cultural evidence was found. The cave is an active wet season sink

Other sites of significance

During the 2010 expedition it was brought to our attention that there is a cave located near to Tiger Cave that contains "skeletons".

We were not able to confirm where the cave is located. However, it is quite possible that this is the "Mayan Bone Cave" explored during the Rio Grande Project expedition in the 1980's⁹.

We were also given more good leads in the Columbia forest reserve, having contacted old chicle cutters, who in the course of their work knew the woods well. Including caves with roaring Tigers and those full of huge Mayan pots

⁹ Dougherty, P. (1985). Belize: The Rio Grande Project. *NSS News* 43(11): 329-334. Account of the 1984 and 1985 expeditions to Toledo District by members of the NSS.

San Jose Area

Gibnut Cave (Ak'tun Ha le'e) (GPS: *contact Institute of Archaeology*)

History

In 2000 Irish cavers explore the entrance series and upper main chamber. Two shafts discovered at the base of the chamber but not explored.

In 2001 SWCC explore the cave and descend the shafts to further chambers and low muddy crawls. Water could be heard at the limit of exploration.

In 2010 SWCC re-explore the cave investigate where water had been heard. Increased water levels prevent further exploration.

Location

Starting at the creek in San Jose an obvious trail is followed for approx. 1.5 hours to a small limestone cliff. The cave entrance is located at the foot of the cliff.



Picture: Entrance to Gibnut Cave. (Maxine Bateman)

Description

A low entrance hole, leads to a small chamber with numerous piles of pottery shards. The left hand passage leads to a number of medium sized passages narrow to a calcite crawl. Beyond the crawl is a large steeply sloping chamber. At the foot of the slope 2 shafts are found. The right hand shaft ends shortly from the base of

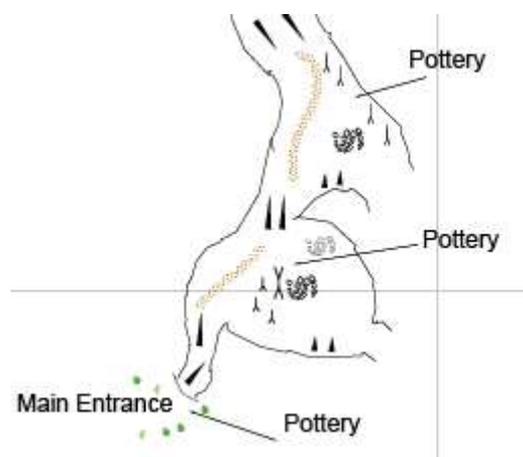
the shaft. The left hand branch enters another large chamber with formations. A small amount of pottery was discovered at the base of the shafts.

Cultural

Throughout the cave there is **cultural evidence**. A few small piles of pottery shards are located near the cave entrance, some with possible imprinted patterns. Further into the cave 2 pits were encountered, these were descended and further evidence of pottery thrown down the shafts was discovered, either from within the cave itself or from a small skylight high above the pit.



Picture: Pottery near entrance, Gibnut Cave. (Maxine Bateman)



Survey: Location of pottery, Gibnut Cave.

The cave is well known to locals and used as a tourist destination. There is increasing evidence of graffiti in the forms of route directions drawn on the cave walls.

Other Areas

The following information is included for reference.

In 2004 a group from SWCC visited 2 caves in the **Mabel Ha** region (GPS: *contact Institute of Archaeology*). Both caves showed evidence of pottery, including a complete bowl in the second cave. On the return trip through the jungle the group was shown a broken pottery vase, with painted figures, that had been removed from a nearby cave.



Picture: Painted vase from unknown Mabel Ha cave. (Phil Walker)

Both these pieces of evidence were taken by the local Alcalde and official guide on the reason of 'transferring' to Blue Creek Cave where they would be 'better protected'. It is not known whether the pieces ever made it to Blue Creek.



Picture: Bowl, approx. 1800¹⁰ years old, Mabel Ha River Cave. (Phil Walker)

¹⁰ Prufer, K. (2010). Personal observation based on picture.

Conclusion

In caving terms the major aims of the expedition were achieved, the Pueblo Creek Cave was pushed to a satisfactory conclusion and all indicators suggest that this connects, albeit probably underwater, to the Ochochpec system. This makes a combined system of over 7km long, which makes it the second longest cave in the Toledo district after the Ok'eb Ha – Blue Creek system.

Tiger Cave was further explored, including the discovery of a second entrance and what appears to be a second stream way. In total it was pushed to over 5km in length, making Tiger Cave the third longest cave in the area.

It is worth noting that an increase in tourist based cave activity is beginning to take effect on the caves in the area. A number of the more popular caves are showing increased traffic and damage to formations.

A total of 3.4 km of new cave was surveyed and explored and an extra 3 km of existing cave resurveyed with the intention of improving and republishing previous data.



Picture: Formations in Lobster Chamber, Pueblo Creek Cave. (Brendan Marris)

Acknowledgements

The 2010 expedition was organised and run with thanks due to the following;

In Belize:

Dr Jamie Awe, Institute of Archaeology,
Dr John Morris, Institute of Archaeology,
Bruno Kuppinger, Sun Creek Lodge,
Keith Prufer,
Domingo Cal, Aguacate village Alcalde,
Santiago Kok Pueblo Viejo village Alcalde,
Emerlino Choc, San Jose village Alcalde,
Jorge Coh, San Pedro Colombia village Alcalde,
Ramon Pop, Basillicus Choco, and Benito Choco, San Pedro Colombia village guides.

In the UK:

Sports Council of Wales,
Ghar Parau Foundation,
Lyon Equipment Expedition Awards,
South Wales Caving Club,
Starless River Caving Equipment,
Bisun,
Viper Lights
Ben Stevens.

In the US:

Peter Bosted,
Bernie Szukalski,
Dr Tom Miller.

Appendix A: 2010 Expedition Log

The following are extracts from the expedition journal. The author is indicated by the highlighted initials.

23 March 2010

Green Pit

MB, RH, RB, NB, TD

Went to investigate a large hole up past Tiger Cave where work is being done on re-building part of the canal. Dry river bed leads to large collapse area. Climbed down on RHS, and up to the right through to a draughting hole. Short drop down led into passage and the loud thunder of water. Surveyed approx. 150m to a river which was recognized as upstream in Roaring River, Tiger Cave.

24 March 2010

Tiger Cave – Roaring Pit

PW, MB, RH & RB

Roaring pit was first descended by Bernie Szukalski in the 1980's on the NSS Rio Grande Projects. At the time (wet season) he only went as far as the first pool at the bottom of the small pitch. Following construction of Hydro Plant and lowering of water levels it seemed a place worthy of a revisit.

RB rigged hand line down slope, bit of a tricky muddy climb. Pool leads to chamber with a lot of sharp rock, slope to left was not explored. Passage continues into another pool with a low airspace duck. Strong current evident, possible into a sump under the left hand wall. After exiting the water the passage slopes upward into a large chamber, 2 main ways on, to the left up a climb and down towards the sound of water. Down leads to stream way, upstream leads via some small swims to a sump with no way on. Team began surveying out, on checking downstream towards another sump an inlet was found with some slow moving canals. Explored to a sump/possible duck, with a possible dry climb over the top.

Left hand route from chamber was checked by RB and seemed to be heading back towards the initial slope in the chamber of sharp rock.

121m of new cave explored and surveyed.

Tiger Cave – Roaring Pit

PW, AB & MB

Returned to check out the canals and possible duck and / or climb. Climb proved to be too tight. Alan pushed through the sump to a small 2m long airspace, but remaining too tight.

Surveyed back to main chamber and then checked out Russ' possible connection back to first chamber. Unexpectedly, the passage proved to carry on in a different direction, approx. 200m of nice rift passage leads to a silted section that required some digging and then a squeeze through. Cross rift then leads to very muddy section. Al and Phil explored this area at some length. Small stream way crosses the passage, sumped in both directions. Passage gradually gets smaller and more constricted. Cave continues through tighter passage, sound of bats could be heard but no draught. Surveyed out with estimated lengths.

Back at climb up from main chamber, Russ' expected route back proved to descend into another section of stream way with a large deep sump pool, presumably coming from the upper section of stream way. This was pushed to another sump, with a tight shattered passage above that could be a bypass but was too tight.

All surveyed and cave derigged. An expected 20 minutes of caving, turned into 5 hour trip, good stuff

400m of new cave explored and surveyed.

Tiger Cave – finding pots

TD, NB, Gavin & Stacy and Bruno

Tourist trip to the end of the cave looking for pots. Found large broken pot just before the end of the cave on alcove on RHS. Took some photos. Noted passage leading to drop with the sound of water before the Roaring River junction. Needs a rope.

25th March 2010

Pueblo Creek

RH, RB, **CS** & NB

Drove to Pueblo Viejo which is the drop-off point in which to walk into Pueblo Creek and spoke to the Alcalde explaining what we were doing. RB, RH & NB had been to the cave before so felt no need to hire a guide. The route was fairly clear, and a large area had been cleared in the forest which meant it was easy to get down to the stream-bed it took us 1 hour 45 minutes to get to the cave entrance. Set up camp, then at 1400 went on a rigging trip down to Lobster Chamber. There was abundance of trees but not as many as in previous years. Climbs rigged with ladder, sling hand line, and a rope hand line. No need for SRT beyond the entrance pitch. Returned to camp at 17:30. The campsite is really good here as it has a large clearing in the forest, lots of firewood, and stones that are good for cooking on and plenty of hammock spaces. There are three hangers in the cave. We think that although this cave is an active river cave it only floods to its capacity every so many years.

Gibnut Cave

(Ak'tun Ha le'e – Mopan)

PW, AB, **MB** & TD

This cave had not been looked at since the 2001 expedition, but had a possible way on at the bottom of a pitch in the final chamber. We went to San Jose to talk to the Alcalde and find a guide who could show us the way to Gibnut Cave. We had been given names of potential guides by Bruno before we left and it turned out that one of these names was the Alcalde. Emelino Choc agreed to guide us for the day and we set off about 10am. It was a hot and sticky day, with the sun shining brightly. After about 90 minutes we came to a bit that Phil and Al recognized but the cave was not in sight. Emelino said the hurricane of 2001 had meant that the trails had changed routes due to the number of trees which were knocked down. Although this was a long time ago and we would have expected he would know where the cave was. He went off in search up the hill a bit, Al went off up the trail and both came back unsuccessful. It looked like we were not going to find the cave so we sat and had some lunch before Emelino tried again. Success, we made our way through the overgrown jungle to the very small entrance. In the cave we headed to the large

chamber, passing some broken pieces of Mayan pottery near to the entrance. Al rigged and dropped the pitch with Toby, while Phil and I tried out surveying using a DistoX. Alan explored small water logged crawl found originally in 2001, but levels of water prevented any further progress. Phil and I managed to re-survey the main route of the cave.

(AB) No way on found but all evidence of our previous visit had been washed away, previously I had thought I'd heard a river, but this may have been due to the large numbers of bats encountered.

26th March 2010

Pueblo Creek

RH, RB, **CS** & NB

Set off into the cave at 0900 after a non-eventful (this is good) evening. We caved into the last survey station which was a hole in wall by inlet (still unexplored) then started surveying in. We went in and followed the river to a 7m free climb then followed the stream way for 60-70m till sumped out, then found passages over the sump (at least 3) To the right is a complex maze, which Nicky and Rich managed to get "lost" in. To the left is another route with a muddy crawl down a slope back into water again. The maze route comes into a moon milky passage on the right (unexplored) Surveyed down main stream way and across several sulphurous swims to a very large sump (approx. 60mx30m.) To the right of the sump another stream enters which may link back to the moon milky passage by the maze. It was not explored. There may be a duck on the right side of the sump. To the left of the sump, over a sandy beach and up a slope, led to a very pretty dry fossil section similar to the crystal maze (need to tape a route through?) with a large stal in the centre. Didn't go any further. A large round window is off to the left, passage may continue to the right. A good place to stop, with some incentive to return. Surveyed 350m in total. Saw crabs, crayfish, and whip scorpions. Out at 0600, 9 ½ hr. trip.

Aguacate, Chaquie Cave

PW, AB, MB, TD, SM & JA

The intention was to try and find Ochochpec and confirm that this was in fact "Machaon Connection". Local guides claimed to know the way to both Ochochpec and Chaquie. We arrived at Chaquie after approx. 2 hours. Chaquie cave was fantastic. Really good trip and fantastically decorated. PW, AB and MB pushed to end, most turned back once cave began to get muddier.

Alan went down shafts at end, where water could be heard. This area had not been explored previously. 15m pitch led to broken 5 m climb, and a cascade. The water rose from a deep sump, flowed down the cascade and sumped deep again, left ribbon marker on RHS. Not really worth the awkward and muddy prussik.

DistoX line survey out. Cave was approx. 1.4k, appears to be going West through mountains, would be interesting to see how the river seen here relates to Pueblo and Ochochpec.

Approx. 50m above the Chaquie entrance is another entrance to Jaguar Cave 70m long cave, explored by Trekforce in 2004.

27th March 2010Pueblo CreekRH, RB, **CS** & NB

Slow trog up the hill after another pleasant night's camp at the entrance. Suffering with the weight of kit in the heat, so were very pleasantly surprised to have an ice-cream van pull up just as we reached the road. A bit surreal seeing this in the jungle – thought I was dreaming, but most welcome. Nice ice-cream too!

28th March 2010OchochpecAB, **PW**, NB & RH

Very hot day for a slog along to locate Ochochpec entrance. GPS'd various entrances noted on the Trekforce report and made better sense of their descriptions. Note – Machacon Connection referred to in the report is Ochochpec. RH went skinny dipping in the pool to confirm this was the right cave. Possible through trip into nearby Bat Cave.

Brendan arrives at base.

29th March 2010Ochochpec**MB**, PW, AB, TD & BM

Yesterday the group had located the entrance to the cave and the route to take to get there, but had not managed to explore as the day was getting late. We walked up today using a route along the dry river bed, traversing around pools of water by using a trail that ran alongside on the river bank. The entrance of the cave is big with a large pool of deep water right in the entrance. We swam across this, reaching another pool and swimming across this too. The water became less deep and we were able to walk, or traverse around the water in places. The passage of the cave is very large and meandering, the cave smells of bats a lot and we saw a lot of active bats flying around. Upon reaching a rather smelly pool of water we could hear a waterfall so headed towards it, climbing up it took us into a bolder choke. We looked for a way on but could not find one despite trying many possible holes. In our keenness we had been drawn towards the water, but the route was in fact, up and over this obstacle and onto a huge rubble slope.

(PW) Finally got into Ochochpec! For years we had thought this cave was in a totally different place so had done no real research into it. It was only by chance I read a reference to the cave being near Aguacate (and not Blue Creek as thought) that led me to go back through surveys and journals before realizing that this cave was probably the same cave that Trekforce referred to as Machacon Connection and was in all probability the resurgence for the Pueblo Creek Cave.

The cave itself is quite impressive, large and a lot of water. The main chamber is huge with massive breakdown. The end of the cave is a large sump pool, approx. 30m x 60m. Uncannily similar dimensions to the pool discovered in Pueblo Creek. Line surveyed out using the DistoX, getting out rather late before a quick stomp through the jungle, about an hour late for pickup.

Back at camp the line survey suggests approx. 380m difference between the sump in Pueblo and the sump in Ochochpec, in nearly a straight line! Hopefully, we can find some bypass to get this a bit closer, but a dry connection looks unlikely know.

Near entrance is a through trip to “Bat cave”, this section has possibly not been examined in much detail.

Shortcut Cave – Mayan Wall

RH, RB & **NB**

Day off trip to investigate Mayan wall, 10m up a cliff, above upstream entrance to Shortcut Cave. Some small shards of pot found at the top and in the Cave, but nothing noteworthy. Disappointed no jade daggers.

30 March 2010

Lots of people feeling crook, also Toby’s birthday so into PG en-masse for breakfast and shopping. MB baked a volcano cake and had to climb into the oven with a helmet and light to clean it after. Fun with Tarantulas in eve.

31 March 2010

Pueblo Creek Cave

RH, RB, MB, AB, BM, **CS**

Chamber with stal at the big sump joined up with passage just before the 7m climb. (AB) Having been in the Ochochpec sump two days ago, this was a complete mirror image of it, swam round the edge, but at all points the sump was deep with no air spaces. There is even a dry series on the right, matching a muddy dry area on the left in Ochochpec, but no way round could be found.

We also swam up an inlet on the right.

From the beach we surveyed back up a large dry series past a fantastic Pagoda formation, which eventually joined back to the main stream way in several places, bypassing the Stinky’s rout connections.

Brian Holland

TD, PW, **NB**

Into PG to see Brian Holland, American geologist for hints and tips. He suggested looking at the area by San Felipe which he knew had some very big shake holes, not too far to get to in “snake rich” country. Also mentioned that he was called out to a quarry there after the machines broke though into the surface of a chamber.

1 April 2010

Pueblo Creek Cave

NB, BM, RH

Went in to do a bit of video and some photography in Crystal Maze. Had a look up for the skylight by the pitch, and photographed a nice broken pot. Quite a lot of passage up there that will need surveying.

Pueblo Creek Cave

AB, **PW**

Trip in to look up the unexplored inlet – went to a fork and took the least promising one through a series of low pools and swims to a sump. Other branch is also on-going. Surveyed back, but ran out of time.

(AB) Hard going, became really cold, having to survey whilst treading water.

500m of new cave surveyed.

2 April 2010

San Felipe**PW, TD, BM, MB, RB, CS**

Following lead from Brian Holland we drove over to San Felipe to check out the large cave found in the quarry. The obvious quarry was a rather small uninspiring place, an hour or so trailing round produced nothing.

Drove a bit further past San Felipe to check out the karst features mentioned by Brian. They seemed generally uninspiring, despite the talk of 300m wide sinkholes. Very low hills and no obvious water courses on the map.

3 April 2010Pueblo Creek**PW, MB, BM, BK, TD**

Explored and surveyed the 'new' entrance series. This piece of passage was originally found by Tom Miller in the 80's and used as an escape route when the main cave flooded. Passage is a lot older and muddier than the rest of the cave with a lot of old stal. Right hand passage leads over top of main chamber and leads to climb down to top of "Better than India" pitch. Left hand route leads to climb down into top of main chamber below pitch.

As we now have equipment-free route into cave, pitch was derigged.

Surveyed 370m.

4 April 2010Pueblo Creek**PW, MB**

Final trip into Pueblo to complete survey of "April Fool Inlet" and check out left hand inlet further into the same series. Start of inlet surveyed to last station in around 30 minutes, using DistoX, then proceeded to new lead. New inlet continues for about a hundred metres in very pretty passage, before lowering to half flooded float under stalactites to small sump pool. Given nature of passage leading to the sump it's possible only a small sump.

Out of cave and derigged ladder.

Explored and surveyed 350m of new cave.

Sat 3 AprilLagonita**NB, AB, RH, CS, RB**

Guides: Basillicus, Ramon, Benito and Pablo (from the Choco family, Colombia)

Walked up the "Esperanza Road" a big bulldozed track going N/S from the 12 mile road. The road was deeply rutted, in the sun and hilly. A couple of hours rest followed the arrival at Lagonita and then a recce trip into the cave which established that a swim at the bottom of the pitch at the end of the known cave led on to open passage.

Sun 4 April

AB accompanied guides early morning to look for a cave "bigger than Tiger Cave" that was the other side of the Esperanza road, past the "table rock". The guides failed to re-locate the entrance.

All then went into Lagonita, RH and AB rigged a rope on a climb and traverse out of the water. (2 bolts, 10m rope) Passage beyond was phreatic, cobbled, and had a layer of silt deposited, suggesting that the passage sumps in the wet season. Commenced surveying, but had problems with the DistoX, so had to abandon. Explored onwards through a large sloping chamber to a final chamber with evidence of a stream rising through the rocky floor in wet season. Noticeable absence of flood debris and cave life. No further ways on were found. Surveyed out using a map compass and estimated distances and inclinations.

Mon 5 April.

Broke camp and walked through jungle towards Champon to look at another cave that Ramon knew of. Approx. 2 hours to the cave, which was a sink along a dry river bed just off the trail. Cave had cool entrance. A cursory look showed the cave ending in a chamber with a muddy sink. A red tag on a stal was found some way into the cave. It was noted that the end of the cave was hot and stuffy, and on the way out, a rift with a draught was found leading down to a 7m pitch. AB and RB went down the pitch, which was extremely sharp into a large active stream way, with passage going in both directions. Whilst starting to survey, another side passage was followed to another larger pitch (approx. 12m) into a large fossil chamber. There were no signs of any descent having been made on either of the pitches. Realising that the cave would need to be surveyed properly, we left exploration at that and walked on the camp past Champon.

(AB) Descending the pitch, hoping to get a quick closure and off to an early camp, instead I heard a river. Had to cut Phil's rope and also my sleeve for a rope protector on the second pitch. P1 6m, P2 4m.

The river was low as it had been a very dry period, but was clean and full of fish. I waded and swam upstream for about 100m, with no sign of any obstructions before repeating downstream.

Due to the failure of our surveying equipment and the limited time to establish camp we decided that we would have to leave this for future cavers.

Tue 6 April

Walked back to Columbia some lovely and well-earned Cokes.

7th April

Tiger Cave (photography)

PW, AB, RH, NB, BM

Initially trip was to take some final photos for preliminary report and general use. Drop in left hand wall before Roaring Pit drop was descended by Brendan, approx. 10m climb was descended. Some evidence of a previous descent. Small crawl descends to large sump pool. No way on.

Parallel drop connects to same pit half way down. Survey completed of section.

Plan to go to Roaring River aborted. All exited cave.

8th April

Expedition ends.

Appendix B: Permission & Permits

All cave exploration in Belize falls under the jurisdiction of the Belize Institute of Archaeology (IA) who control access. This is due to the significance that caves played in the ancient Maya culture and the artefacts that maybe encountered within caves. To prevent theft or remains from being destroyed by ignorance, permission must be obtained from the IA.

As of 2010 this needs to be initiated well in advance of any expedition planned for Belize. In addition it has now become a requirement for some form of archaeological expertise to be included within the any expedition members.

In addition if required permission to camp in the jungle and forest reserves must be obtained from the Forestry Department before heading into the jungle areas. There is often a charged levied for this permission.

Appendix C: Travel & Transport

All flights to Belize, at present, route through US hubs into Phillip Goldson Airport, Belize City. Flight prices have remained constant from 2001 at around £580 - £650 in the Easter period that the expeditions are run. As a short night stopover in the US is usually involved, a ticket including a hotel is recommended.

N.B. As of 2010 there is a proposed new airport to be developed in the town of Placencia, this may allow quicker access to the South of the country.

Once in Belize there is an excellent network of buses linking the country, cheap but time consuming, though a great way to see the place and people. The main highways through the country are improving and with the recent discovery of oil in the south of the country there is a noticeable increase in the usage of the roads by articulated lorries.

Vehicle hire; Belize has a massive weighting on prices geared to tourists, even in the remote areas an older vehicle will still cost \$150Bz per day, in the villages a private arrangement can be made, for \$50-75Bz.

Appendix D: Food & Accommodation

Previously all SWCC Belize expeditions have been based in the local villages. In 2010 the expedition was lucky to be provided with excellent accommodation and good food courtesy of our hosts Bruno and Melissa Kuppinger of Sun Creek Lodge.



Picture: Sun Creek Lodge. (Brendan Marris)

Appendix E: Guiding

On all the expeditions we have been active in using local resources and have continued to build good relations with the local population of many of the Mayan villages, using the villages Alcalde's, official guides and local hunters.

In many instances the main expedition objectives were in easy reach of accessible roads and villages. Although guides were not always used, our intentions and end of day updates were communicated to the local communities.

Appendix F: Finance

Expenditure	£	\$BZE	per person (approx.)
Flights	£6,120.00		£680
Insurance	£1,080.00		£120
Accommodation ⁽¹⁾	£666.67	1960	
Transport ⁽²⁾	£626.02	1840.5	
Belize expenses ⁽³⁾	£790.66	2324.55	
UK expenses ⁽⁴⁾	£452.50		
	<u>£9,735.85</u>		
Income			
Starting balance	£228.15		
Ghar Parau Grant	£300.00		
Welsh Sports Council Grant	£1,100.00		
US members contribution	£180.00		
Member contribution	£7,927.70		£880.86
	<u>£9,735.85</u>		

(1) Accommodation**\$BZE**

Rooms

1860

Utilities

100

1960**(2) Transport****\$BZE**

Vehicle Hire (19days @ 50pd)

750

Fuel

917

Taxis & Buses

111

Fuel

62.5

1840.5**(3) Belize Expenses****\$BZE**

Food

1584.05

Guiding

690

Fees / reserve access

40

Drugs

10.5

2324.55**(4) UK Expenses****£**

Medical kits

52.5

Report (*estimated*)

400

452.5

Appendix G: Photography

All of the team carried personal digital compact cameras which allowed high standard capture of most of the day to day activity. For larger underground shots a kit consisting of the following equipment went out in the second week.

- Canon EOS 40D,
- Sigma 10-20mm EFS lens,
- Canon 18-55mm EFS lens,
- Sigma 28mm F1.8 EF lens,
- Vivitar 285 flashguns x 3 with Firefly 2 slaves.

The first challenge after arriving in Belize was to open the waterproof Pelicase that the camera and flashguns had been transported in. The automatic air pressure relief valve had done its job in equalising the pressure in the case on the flight, but failed on the return to ground leaving the case securely vacuum packed. The predicament was resolved by driving a hole in the case to let in air and then reseal the hole formed. The wide angle lens – essential for some of the larger passage / chamber shots was found to be damaged on the first days shooting at Ochochpec cave. This resulted in no underground shots been taken in this cave. Following this we reverted to using the 18-55mm lens for all future photography.

The Canon 40D produces very little noise in the images and this allows it to be used on high ISO settings thus allowing you to operate with less lighting equipment, essential in an environment where it is vital that the weight that you carry is minimised.

The extreme humidity in the caves proved to be one of the greater challenges with the saturated air causing issues with lighting the shot and also providing trouble with condensation on the camera lenses.

On one of the final days we took time to do some experimentation with utilising the high power caving headlights – the Viper light in the large passage of Tiger Cave. The results were very encouraging, and with practice some stunning results should be obtainable. On future expeditions if enough of the team have high performance lighting, exploratory trips deep in the jungle should be able to utilise the personal lighting for the photography, thus minimising the amount of gear to be carried in.

(Brendan Marris)

Appendix H: Medical

As in previous years, team members sought their own inoculations prior to the expedition and sourced anti-malarial drugs from chemists as over the counter medicine. Team members were responsible for their own regime but as all personnel had opted for chloroquine (a once a week medication) as the anti-malarial drug of choice, "malaria Monday" became the norm. Medical/next of kin questionnaires were completed for all team members before departure.

In the field cases of cuts etc. were very few and far between. However this year two cases of diarrhoea were contracted with one being a very long term bout running to several weeks after the expedition ended. No source was found for these cases.

More alarmingly there were two cases of team members suffering from bites that appeared to be necrotising with suppurating sores increasing in size (see below). One team member suffered approx. 14 of these bites. Later investigation indicated that the most probable cause was from the Brown Recluse spider, a proper nasty little critter! Untreated bites can necrotise to an alarming degree with some victims requiring surgery and skin/tissue grafting. Treatment was given in the form of anti-histamine and anti-inflammatory drugs with paracetamol to reduce high temperature.

(Rich Hudson)



Picture: Effect of Brown Recluse spider bite. (Richard Hudson)

Appendix I: Surveying

A traditional compass and clino approach to surveying was undertaken on the majority of surveying work in Pueblo Creek and Tiger Cave. Electronic surveying, with a DistoX and PDA was attempted on more exploratory trips where the number of people available for surveying was limited or time was a factor.

The DistoX came into its own when a fast line survey was required in order to pinpoint the location of Ochochpec cave in relation to Pueblo Creek. It took around an hour to survey from the furthest limit, back 2km, to the entrance.

However, the wet and humid conditions took their toll on the equipment and the DistoX started to behave erratically and following a trip into the jungle the device stopped working, closely followed by the first PDA device.

A second DistoX was used, but calibration proved problematic and subsequent investigation of the results have proved that a number of readings were incorrect.

Surveying Equipment:

Tape 2x30m

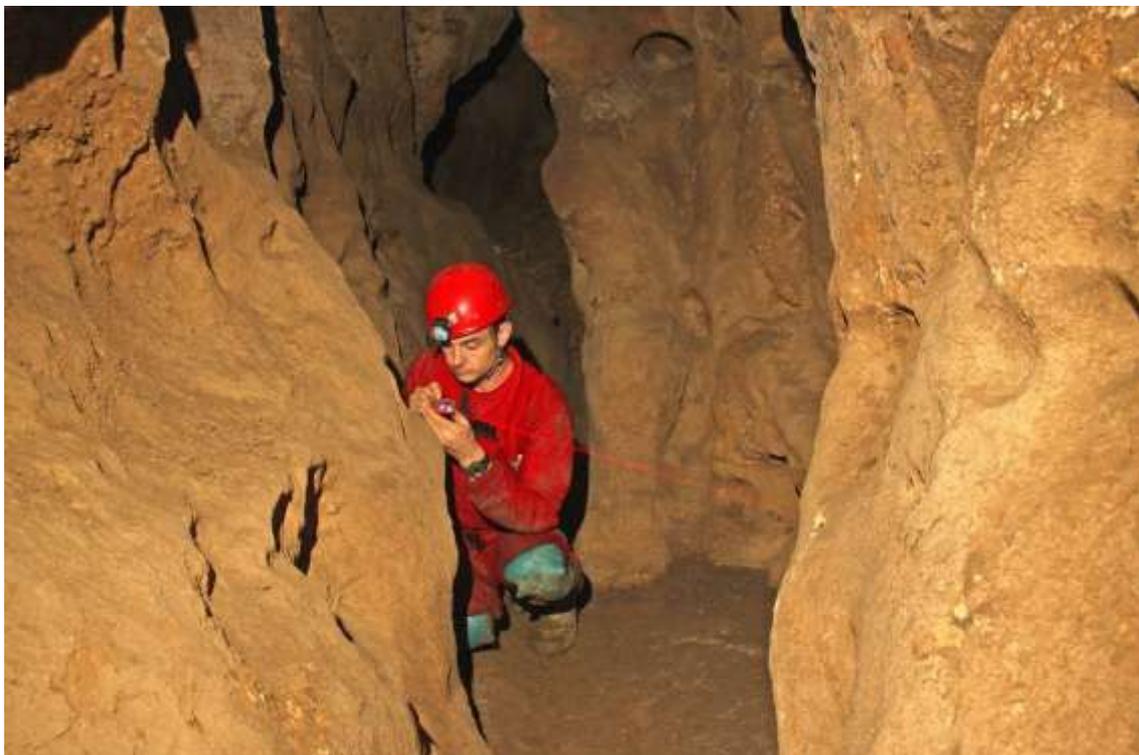
2x Sunto Compass & Clinometer

5x waterproof notepads

2x Otterbox 2000

2x DistoX. Dell Axim 51v PDA, HP iPaq PDA

(Phil Walker)



Picture: Surveying in Tiger Cave. (Brendan Marris)

Appendix J: Cave Locations

The list below summarises grid references taken during the 2010 expedition. Further grid references are available in previous reports¹¹.

N.B. At the request of the Belize Institute of Archaeology all grid references are removed from the generally available reports.

Area	Site name	Zone	Easting	Northing	Notes
Rio Grande	Tiger Cave				
	Green Pit				New entrance into Tiger Cave, upstream Roaring River.
	Lagonita Cave				
	Ramon's Cave				
San Jose	Gibnut Cave				
Pueblo Viejo	Pueblo Creek Cave				
Aguacate	Ochochpec				
	Chaquie Cave				Downstream of Ochochpec entrance is obvious inlet. Follow this back upstream.

Table: 2010 grid locations, WGS-84 datum.

¹¹ Braybrooke, A. et al. SWCC Belize 2001, SWCC Belize 2002, SWCC Belize 2006, SWCC Belize 2008.

Appendix K: Cave Lengths

The following cave lengths are based on 'known', published data as of 2010.

Toledo District¹²

Cave	Area	Length	Notes	Source
Rio Blanco Sink (<i>Yit Ha</i>) – Blue Creek Cave (<i>Ho'keb Ha</i>)	Rio Blanco - Blue Creek	> 9000m		Miller, Thomas E. (1996). Geologic and Hydrologic Controls on Karst and Cave Development in Belize . <i>Journal of Cave and Karst Studies</i> 58(2):100-120. Jason Project 1995
Pueblo Creek (<i>Flush Cave</i>) - Ochochpec	Pueblo Viejo - Aguacate	> 7000m	Pueblo Creek (4.7km), Ochochpec (2.1km), sumped for approx. 380m No dry connection between the two caves found	Walker, Phil. (2010). - Belize 2010, SWCC report . Miller, Thomas E. (1981). Houses of Stone . <i>Caving International No 11, April 1981</i>
Tich Hultz (<i>Tiger Cave</i>)	San Miguel, Rio Grande	> 5078m	Currently 4 known accessible entrances.	Walker, Phil. (2010). - Belize 2010, SWCC report . Dougherty, P. (1985). Belize: The Rio Grande Project . <i>NSS News</i> 43(11):
AC Cave	Bladen Branch	4000m		Dunham, Peter. (1997). Summary Report of the 1997 Season of the Maya Mountains Archaeological Project (MMAP) . <i>MMAP Report</i>
Yax Ta' Ha	Rio Grande	> 3000m		Miller, Thomas E.(1996). Geologic and Hydrologic Controls on Karst and Cave Development in Belize . <i>Journal of Cave and Karst Studies</i> 58(2):100-120.
Chaquie Cave	Aguacate	1515m		Rhodes, Chris. (2004). Blue Creek 2004, Trekforce report . Walker, Phil. (2010). Belize 2010, SWCC report .
Lagonita Cave	Rio Grande	901m		Walker, Phil. (2010). Belize 2010, SWCC report .
Gibnut Cave	San Jose, Rio Columbia	860m		Braybrooke, Alan. (2001). Belize 2001, SWCC report .
Champon Cave	Rio Grande	635m		Braybrooke, Alan. (2006). - Belize 2006, SWCC report .
Kangaroo Cave	Rio Grande	611m	Now flooded and inaccessible.	Dougherty, P. (1985). Belize: The Rio Grande Project . <i>NSS News</i> 43(11):

¹² There are a number of caves around 2km long in the Bladen Branch but data is not readily available.

Belize

Cave	Area	Length	Notes	Source
Chiquibul System (<i>Cebada - Xibalba - Tunkal - Kabal</i>)	Chiquibul	> 55000m	Cebada (17.2km), Tunkal (12.2km)	Williams, Nick. (1996). An Introduction to Cave Exploration in Belize. <i>Journal of Cave and Karst Studies</i> 58(2). Miller, Thomas E.(1996). Geologic and Hydrologic Controls on Karst and Cave Development in Belize. <i>Journal of Cave and Karst Studies</i> 58(2):100-120.
Petroglyph - St Herman's Cave	Boundary Fault , Caves Branch	17000m		Williams, Nick . (1996). An Introduction to Cave Exploration in Belize. <i>Journal of Cave and Karst Studies</i> 58(2).
Rio Blanco Sink (<i>Yit Ha</i>) – Blue Creek Cave (<i>Ho'keb Ha</i>)	Blue Creek, Toledo	> 9000m		Miller, Thomas E.(1996). Geologic and Hydrologic Controls on Karst and Cave Development in Belize. <i>Journal of Cave and Karst Studies</i> 58(2):100-120.
Actun Chek	Boundary Fault , Caves Branch	8100m		Williams, Nick . (1996). An Introduction to Cave Exploration in Belize. <i>Journal of Cave and Karst Studies</i> 58(2).
Barton Creek Cave	Barton Creek	> 8000m		Larson, D (2005) Report on Multiyear Project to Map and Photograph Caves for the Belize Institute of Archaeology, 14th International Congress of Speleology.
Pueblo Creek (<i>Flush Cave</i>) - Ochochpec	Pueblo - Aguacate, Toledo	> 7000m	Pueblo Creek (4.7km), Ochochpec (2.1km), sumped for approx. 380m No dry connection between the two caves found	Walker, Phil. (2010). Belize 2010, SWCC report. Dougherty, P. (1985). Belize: The Rio Grande Project. <i>NSS News</i> 43(11).
Actun Tunichil Muknal	Boundary Fault, Cayo	5300m		Williams, Nick . (1996). An Introduction to Cave Exploration in Belize. <i>Journal of Cave and Karst Studies</i> 58(2).
Tich Hulz (<i>Tiger Cave</i>)	Rio Grande, Toledo	> 5078m	Currently 4 known accessible entrances.	Walker, Phil. (2010). Belize 2010, SWCC report. Dougherty, P. (1985). Belize: The Rio Grande Project. <i>NSS News</i> 43(11).
Actun Nab Nofel Inferior	?	4500m		<i>Wikipedia</i>
AC Cave	Bladen Branch, Toledo	4000m		Dunham, Peter. (1997). Summary Report of the 1997 Season of the Maya Mountains Archaeological Project (MMAP). <i>MMAP Report</i>
Actun Lubulha	Boundary Fault , Caves Branch	3750m		Miller, Thomas E.(1996). Geologic and Hydrologic Controls on Karst and Cave Development in Belize. <i>Journal of Cave and Karst Studies</i> 58(2):100-120.

Appendix L: Contacts

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12 Fort Street

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E-mail: base@btl.net

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23/25 Unity Boulevard

Belmopan

Belize, Central America

E-mail: fdsecretary@mnrei.gov.bz

Bruno Kuppinger

Sun Creek Lodge

P.O. Box 121

Punta Gorda

Toledo-District

Belize, Central America

E-mail: suncreek@hughes.net

Appendix M: Further reading

A fairly comprehensive bibliography on Belizean caving was compiled by Nick Williams in the 1990's.¹³

SWCC has published reports for all their expeditions over the last decade (2001, 2002, 2006, 2008 and 2010). These are available from the SWCC library, the BCA Library and available online at the following locations:

<http://www.swccbelizecaving.co.uk>
http://ukcaving.com/wiki/index.php/Toledo_District

Much material on caving in Belize now appears within archaeological reports from various parties undertaking research in the country. The best source of current information is from the Foundation for the Advancement of Meso-American Studies (FAMSI) website.

Name	Link
Academic	
Belize Valley Archaeological Reconnaissance Project	http://www.bvar.org/index.htm
Foundation for the Advancement of Meso-American Studies	http://www.famsi.org/
European Association of Mayanists	http://www.wayeb.org/
Western Belize Regional Cave Project	http://www.indiana.edu/~belize/
Sibun Archaeology	http://www.bu.edu/tricia/index.shtml
Government	
Belize Audoban Society	http://www.belizeaudubon.org/
Belize Institute of Archaeology	http://www.nichbelize.org/ia-general/welcome-to-the-institute-of-archaeology.html
Forestry Department	http://www.chm.org.bz/forestdepartment/belizeFD/BelizeFD_files/Page395.htm
Commercial	
Suncreek Lodge	http://www.suncreeklodge.de/englisch/home.html
Ian Anderson Cave Branch	http://www.cavesbranch.com/
Other	
Lonely Planet Belize	http://www.lonelyplanet.com/belize
Sponsors	
Sports Council of Wales	http://www.sports-council-wales.org.uk/
SWCC	http://www.swcc.org.uk/
Starless River	http://www.starlessriver.com/shop/
Bisun	http://www.bisun.co.uk/
Ghar Parau	http://gharparau.org.uk/

¹³ Williams, Nick—Bibliography of Belizean Caving. *Journal of Cave and Karst Studies* 58(2):145-151.

Viper Lights	http://www.vipercave.com/index.php
Lyon	http://www.lyon.co.uk/
Specialist	
Survex	http://survex.com/
PocketTopo	http://paperless.bheeb.ch/download.html#PocketTopo
Cave Survey Data Convertor	http://www.darkgem.com/wsc/caving-talk/index.php?title=CaveSurveyDataConverter
Auriga	http://www.speleo.qc.ca/auriga/

.Table: General list of informational web links.