

SOUTH WALES CAVING CLUB

BELIZE 2013

REPORT OF THE CAVING EXPEDITION TO THE TOLEDO DISTRICT OF
BELIZE, CENTRAL AMERICA
March – April 2013



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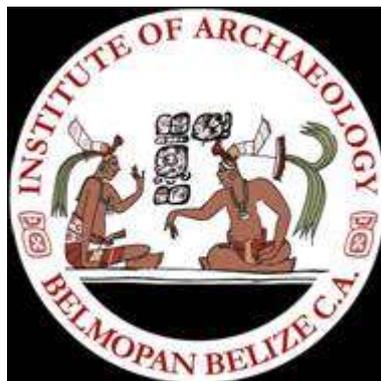
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Cover Photo: Yax Ta Ha (Phil Walker)

Abstract

The 2013 Belize expedition was focussed around continued exploration of cave sites along the Rio Grande area of the Colombia Forest Reserve and a unique opportunity to investigate the possibility of new exploration in the Bladen Nature Reserve, an area usually off limits to most people.

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



Introduction

This was the sixth 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 2013 expedition was based on two fronts. Firstly continuing the previous expedition work around the Rio Grande within the Columbia Forest Reserve, cataloguing and surveying cave systems along the river. Secondly, the opportunity arose to being some initial reconnaissance and exploration work in the Bladen Nature Reserve.

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.

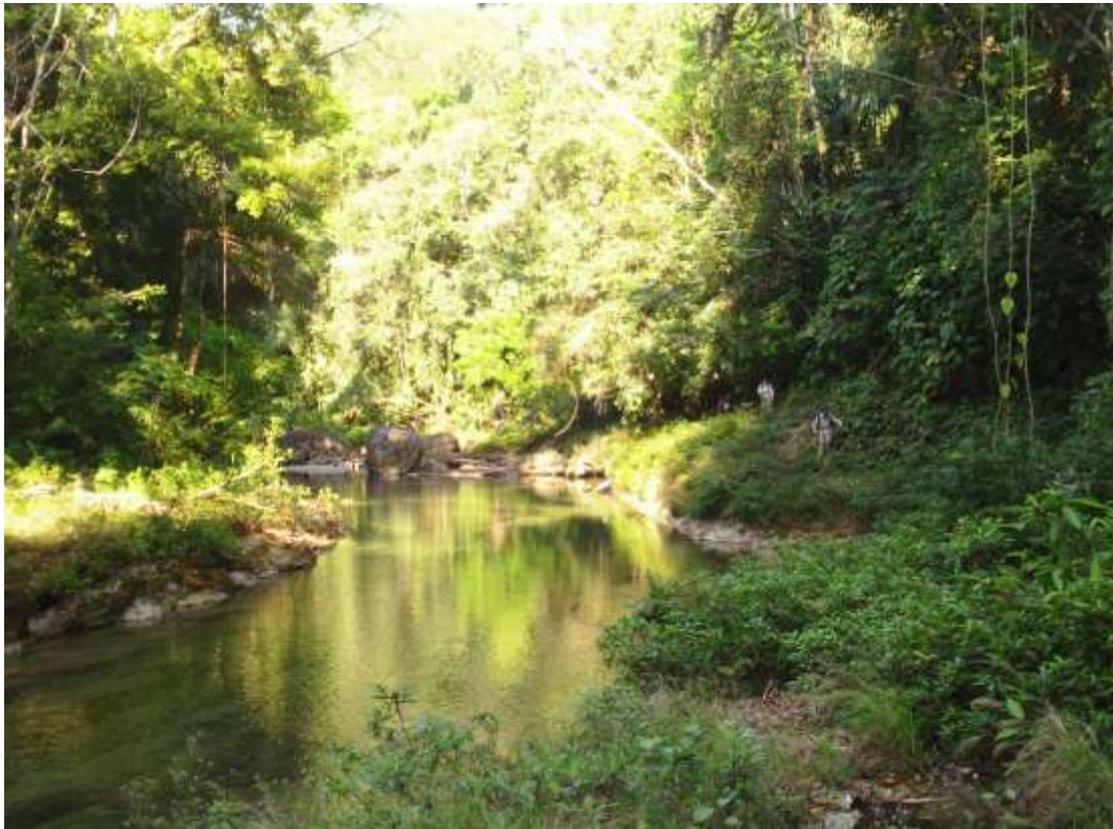
Expedition Aims

The primary aims of the expedition were as follows:

- Exploration in the Bladen Nature Reserve to locate and investigate cave sites to determine suitability for future expeditions
- Complete exploration of Ramon's Cave, Rio Grande reservation.

Time permitting; the secondary objectives were as follows:

- Continue exploration of Tiger Cave, Rio Grande, in particular an unclimbed waterfall in the Roaring River section of the cave.



Picture: Bladen River. (Chris Jones)

Expedition Members

<p>Alan Braybrooke</p> 	<p>Caver for 19 years, member of South Wales Caving Club (SWCC). Expeditions to Spain. 6 Previous expeditions to Belize (2001, 2002, 2004, 2006, 2008, 2010) Expeditions to Spain, France and Canada. Teacher of Outdoor Education Cave Instructor Certificate (CIC) West Brecon Cave Rescue Team (WBCRT)</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) 4 previous expeditions to Belize (2002, 2006, 2008, 2010)</p>
<p>Tom Eliot</p> 	<p>Extensive caving across the UK, with Cave archaeological projects on Skye and in the Mendips. Archaeologist</p>
<p>Lucy Greenwood</p> 	<p>Caver for 2 years, a member of Devon Cave Rescue, Bristol Exploration Club, Devon Spelaeology Society and Exeter Uni SS Archaeologist</p>
<p>Andy Lewington</p> 	<p>Caver for 33 years, CIC, Outdoor Instructor (MIC). BCA LCLMA Trainer/Assessor Caved in – UK, Ireland, France, Spain, Thailand, China, Mexico, New Mexico, Sardinia, Belize 2008</p>
<p>Amy Nixon</p> 	<p>Caver for 3 years – Cardiff University Caving Club (CUCC). Active member of SMWCRT medical team. Dachstein, Austria (2010), Kosovo (2012)</p>

<p>Chris Jones</p> 	<p>Caver for 5 years - caved in all areas of the UK for 5 years and several expeditions to Austria (twice to the Hirlatz and three times to Dachstien Canada and Switzerland.</p>
<p>David Powlesland</p> 	<p>Caver for 8 years. Member of Cardiff University Caving Club. Expeditions to Austria - Dachstein - 2007,2008, 2009, 2010 & 2011, Hirlatz 2010 & 2011.</p>
<p>Phil Walker</p> 	<p>Caver for 18 years, member of South Wales Caving Club (SWCC) 5 Previous expeditions to Belize (2001, 2004, 2006, 2008, 2010). Expeditions to Canada, Spain and France.</p>



Picture: Team Photo, 2013. (Phil Walker)

From L to R: Andy Lewington, Tom Elliot, Lucy Greenwood, Phil Walker, Chris Jones, Amy Nixon, David Powlesland, Toby Dryden, Alan Braybrooke

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.
- **2010** – 9 Cavers, Roaring Pit, in Tiger Cave passed and explored for 500m. Pueblo Creek explored to final sump, over 7km of new cave found.



Rio Grande Area

Tiger Cave (Tich Hulz) (*Co-ordinates available from IA*)

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.

In 2013 SWCC climb waterfall into new section, "The Growler", an extremely active section of waterfalls, directly under the hydro canal, with water levels probably relative to leaks within the canal walls above.

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

A full description of the cave can be found in the SWCC 2010 Expedition Report¹.

2013 Discoveries

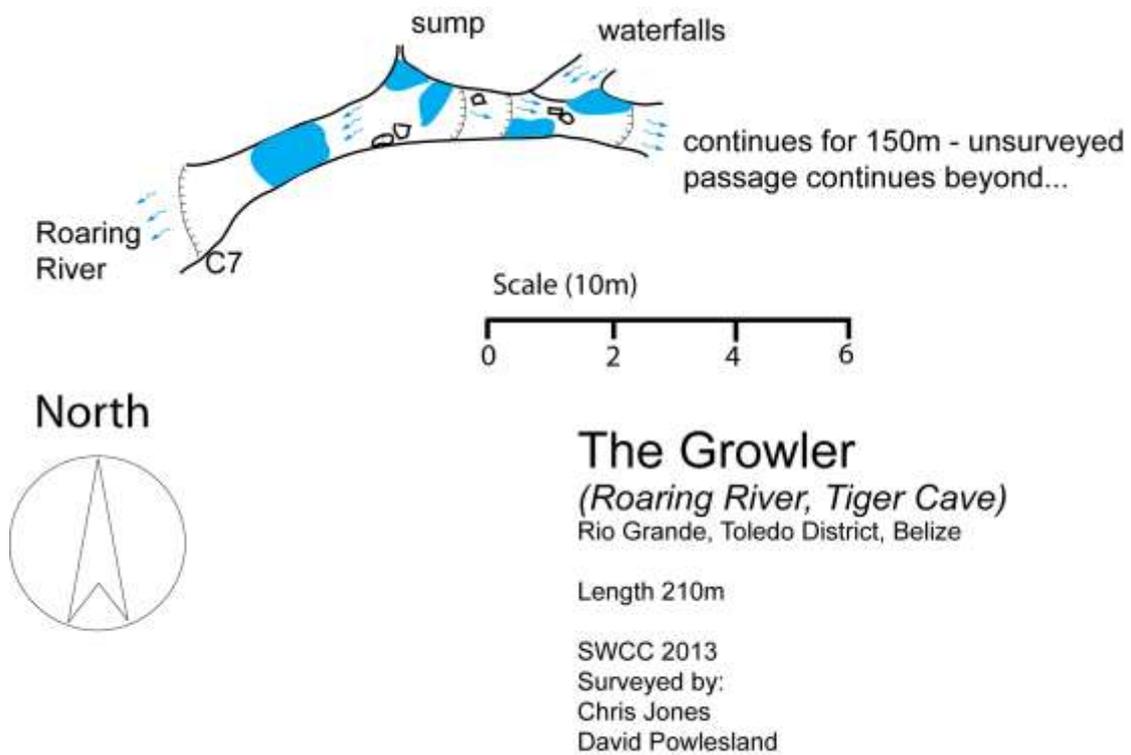
Downstream in the "Roaring River" just before the downstream sump is an obvious 7m high slab. This is an awkward climb to the new section of passage. At the top there is muddy passage on the left and flowing water on the right going over calcite. The passage can be followed upstream to a large inlet pool. Turning right the passage lowers and descends down through gour pools to reach a large 5m high with potential passage at top.

¹ Walker, P. "Belize 2010", SWCC. 2010

The passage continues with swims, following the water downstream, passing an inlet on the right (no potential) to a climb down a small rift into a deep narrow pool, the 'Cracking Canyon'. Swim under a waterfall and continue downstream to an obvious climb out of water onto a false floor. At this point water emerges from several head height holes in the roof before disappearing under the calcite floor. Further traverses over crumbly calcite and false floors lead to a continuation of the passage – **unexplored**.

The direction of the passage heads east towards Mucbe Cave, probably beyond the upstream sump of Mucbe cave.

The quantity and different direction of water in the passage suggests the flow may be relative to the above hydro canal, which is known to spring leaks that would flow directly into the cave. Once the leaks are fixed, the level of water is likely to drop.



Survey: "The Growler", Tiger Cave – Rio Grande

Bat Cave (*Mucbe*) (*Co-ordinates available from IA*)History

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

In the years 1985-86 the cave is explored by members of the "NSS Rio Grande Project". Survey off cave aborted after puncture to dinghy.

In 2013 SWCC resurveyed cave.

Location

Follow the road from San Miguel to the Hydro Plant. Take left hand turn at obvious junction and continue downhill. Mucbe Cave is the obvious entrance by the lake downstream of the Hydro Plant.

Description

The large boulder filled entrance continues to high stream passage with a small swim to obvious junction.

Straight on at junction leads to large sump. A small 5m climb at the end leads to a tight narrow rift above the sump, heading north.

Right at the junction leads up to smaller passage, eventually turning back on itself and re-joining the main cave close to the entrance.

Mucbe Cave

(Bat Cave)

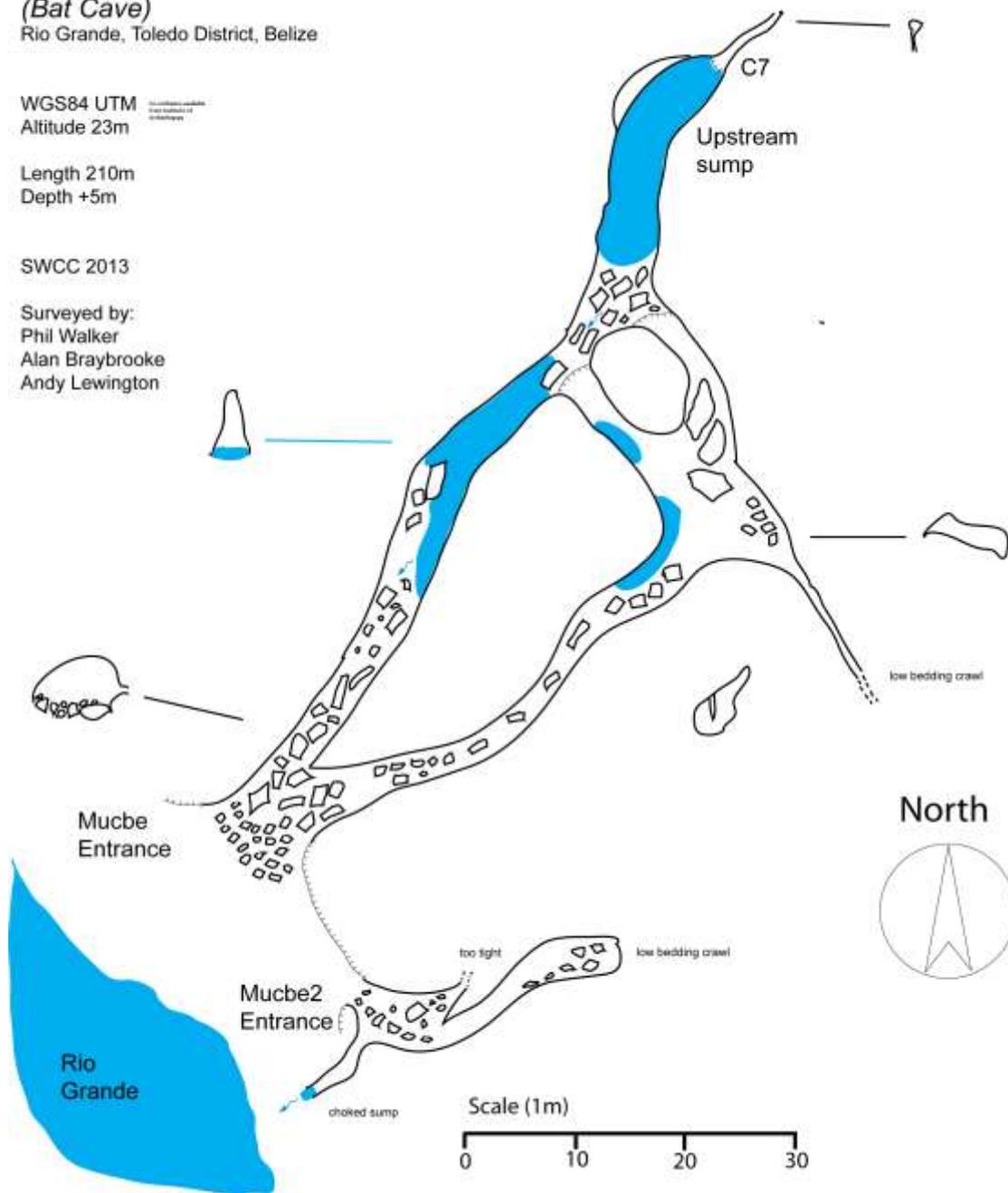
Rio Grande, Toledo District, Belize

WGS84 UTM
Altitude 23m

Length 210m
Depth +5m

SWCC 2013

Surveyed by:
Phil Walker
Alan Braybrooke
Andy Lewington



Survey: Bat (Mucbe) Cave – Rio Grande

Yax Ta 'Ha (Ramon's Cave) (*Co-ordinates available from IA*)

History

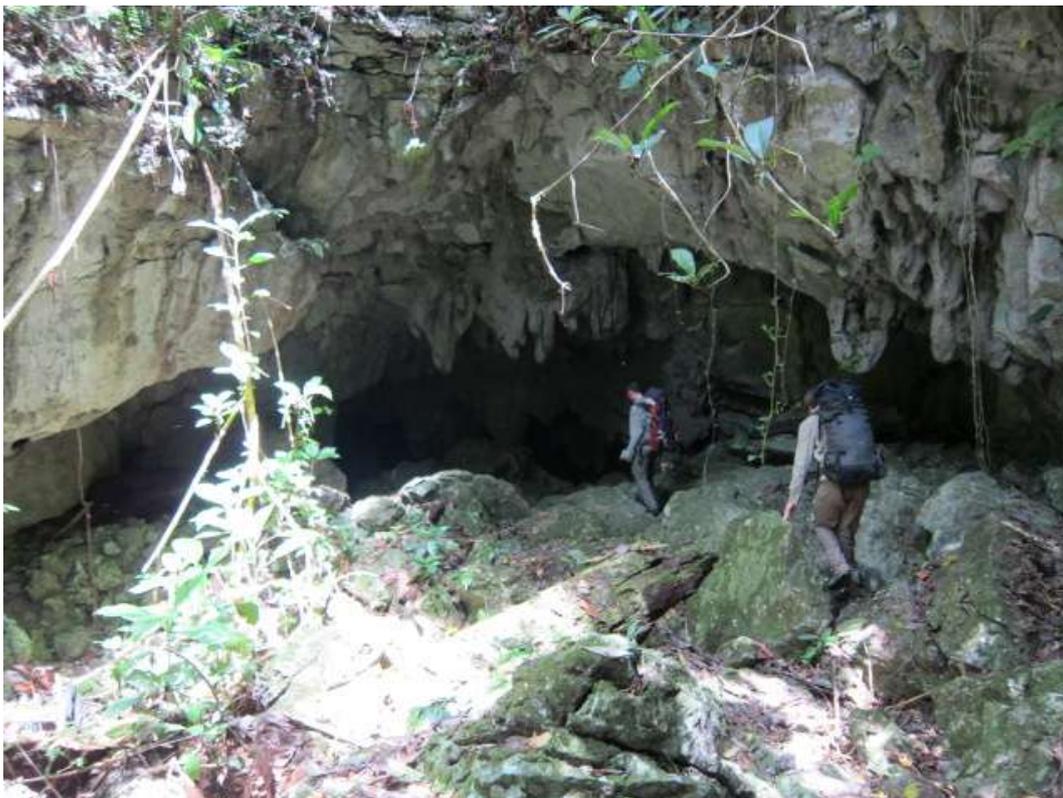
In 2010 SWCC entered the cave and explored for several hundred metres without completion. It was apparent that the first part of the cave had previously been explored, possibly by equipped cavers. An apparent previously unexplored way on, deeper into the cave, was found.

In 2013 SWCC continued exploration into the lower stream series, following the cave upstream and downstream to sumps. Numerous side passages and routes back to the upper series were explored.

Once the cave had been drawn up it became apparent that this was the cave referred to as Yax Ta 'Ha, discovered and explored by Tom Miller in 1982.

Location

The stream crosses the main trail above Champon Cave, with the cave only about 50m away.



Picture: Yax 'Ta 'Ha – Ramon's Cave entrance (Phil Walker).

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 reaching the main stream way

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.

Continuing along the main passage at the fork, it descends gradually until a large chamber was entered, a route to the right leads down to a stream inlet which eventually enters the stream way just upstream of the downstream sump.

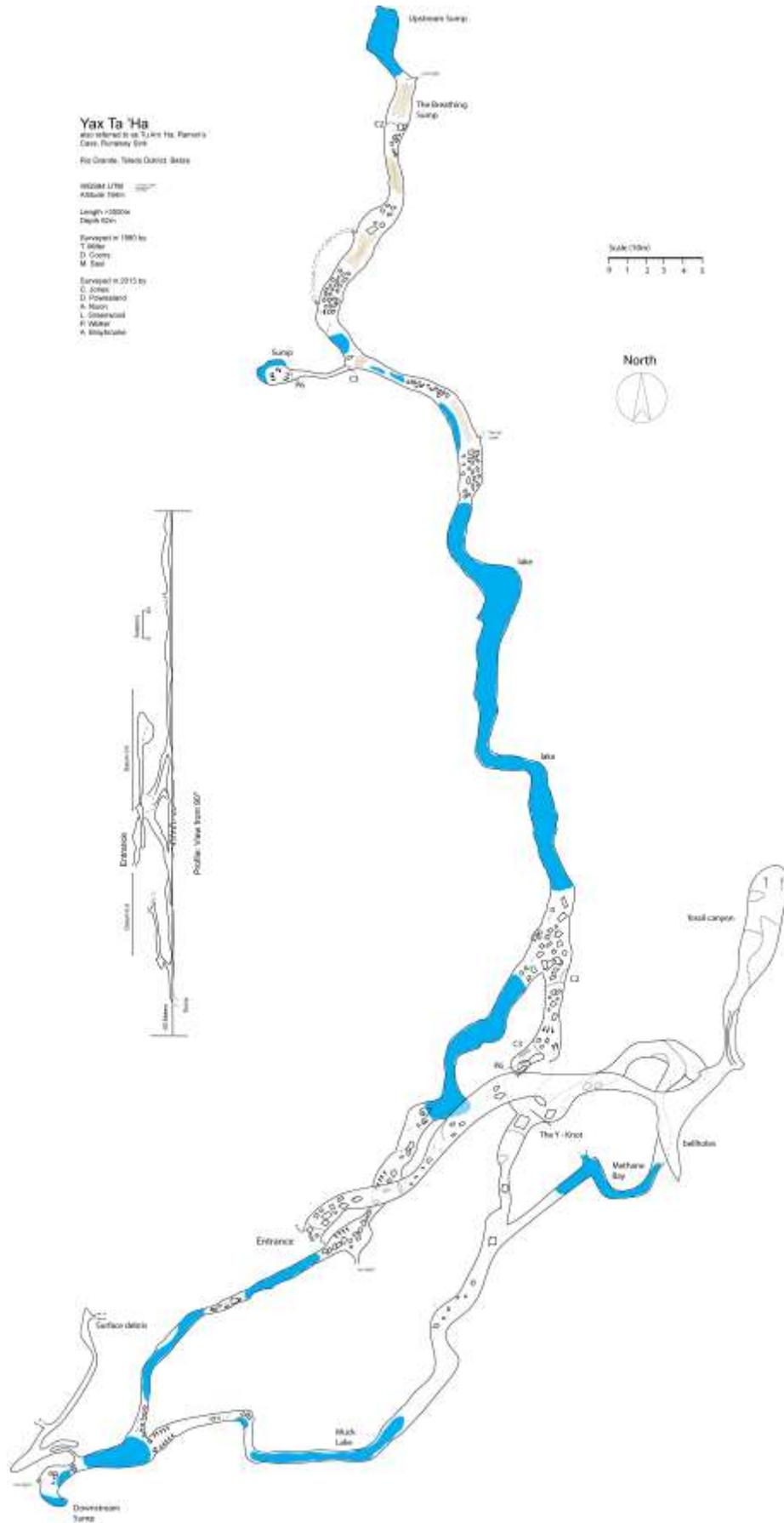


Picture: Yax Ta 'Ha downstream (Phil Walker)

Upstream leads through a series of pools to an obvious boulder choke, which connects back to the pitches entering from the Upper Series. Following the stream still, more long swims and boulder passages leads to a large collapse area, which can be climbed for a long distance, but with no obvious routes at the top.

The stream level continues through more swims and pools before a climb down leads to the Upstream Sump.

Approx. 100m back from the upstream sump a 3m climb on the left leads to a low crawl and pitch down to another sump.



Survey: Yax Ta 'Ha – Rio Grande

Su Sil 'Ha (*Co-ordinates available from IA*)

History

In 2013 SWCC discovered and explored cave for >400m, with numerous leads left unexplored.

There was no evidence of previous exploration. The cave lies some distance from known trails.

Location

Su Sil 'Ha lies approximately 1.5km North East of Ramon's Cave (Yax Ta 'Ha) and the main Rio Grande cave systems. An obvious seasonal creek flows from North to South into a large entrance shaft. It is assumed that the entrance would take the majority of the stream in wet season and would be impassable.



Picture: Su Sil 'Ha Entrance (Chris Jones)

Description

The entrance shaft is 45m deep, with a large calcite flow at 25m that can be used to rebelay the rest of the shaft. The bottom of the pitch lands in a small chamber. Turning left out of the chamber heads into a larger chamber, covered in calcite, which descends through large boulders to an obvious junction. Straight on leads

through a large boulder choke to another chamber and evidence of water sinking in the floor.

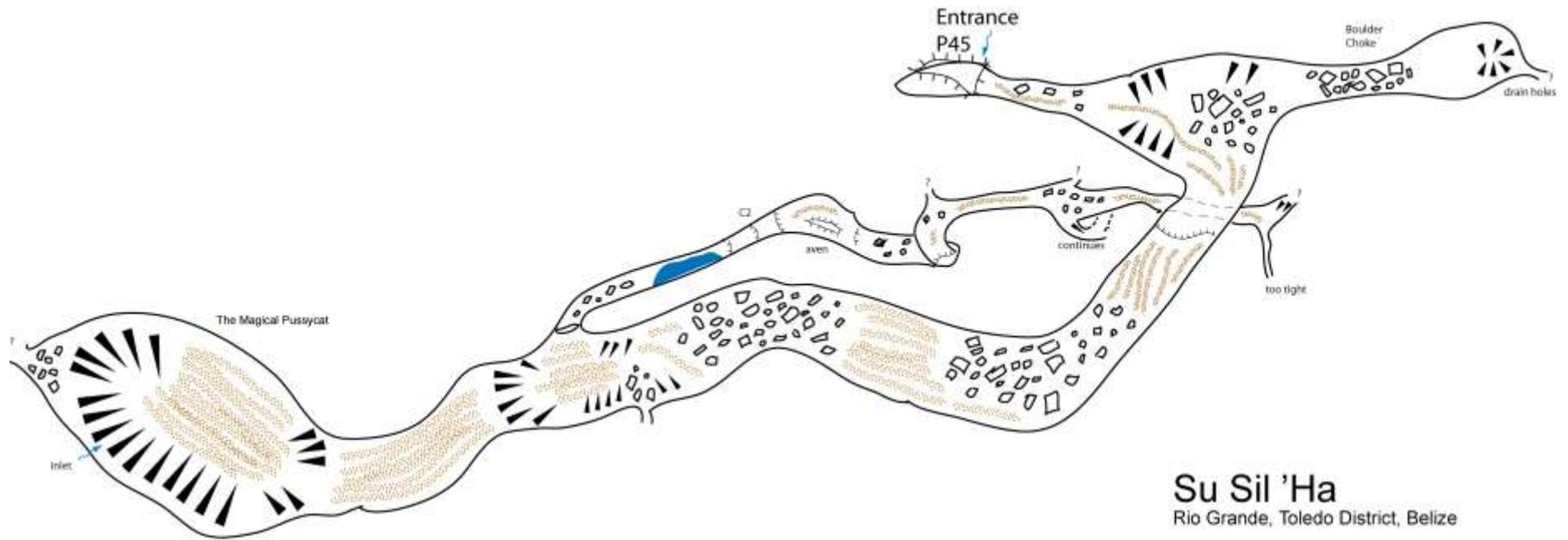
Turning right at the junction, the passage lowers briefly before opening out into a large passage, littered with more calcite covered boulders. The passage continues on an impressive scale through more boulders before descending into a chamber with a large slope straight ahead and a smaller passage to the north.



Picture: Su Sil 'Ha, Main Passage. (Phil Walker)

Straight up the slope leads to more large passage that drop into a large 20m x 30m chamber with evidence of lots of flood debris. A possible continuation is at the far end of the chamber up a mud slope.

The small passage heading out of the previous chamber turns eastwards on a smaller scale, with a series of down climbs, following a dry stream bed. A number of avens and side passages remain unexplored. The passage eventually splits, with the stream bed turning and heading north. This was not explored but continues as a low crawl. This is possibly an upstream inlet, but is heading back (and only 20m) below the entrance chamber.



Su Sil 'Ha
Rio Grande, Toledo District, Belize

WGS84 UTM
Altitude 223m

Length 410m
Depth 66m

SWCC 2013

Surveyed by:
Phil Walker
Alan Braybrooke
David Powlesland

North



Scale (10m)



Survey: Su Sil 'Ha – Rio Grande

Bladen Nature Reserve

The following sections details a reconnaissance trip along the Bladen river between the Bladen Ranger base and Teakettle camp. The aim was to record sites of speleological interest to assist future exploration in the area.

It is likely that many or all of the caves described below have been explored, may already have names, and in some cases may have been surveyed. Unfortunately the information is either not recorded or is not easily available. In some cases archaeologists are likely to explored and mapped at least part of the following sites.

The sites were explored as the team made their way up the Bladen river to Teakettle Camp. A few sites were explored on the way back. They are numbered in the order that they were investigated. 'River left' and 'river right' are as if you were travelling downstream.

There were no archaeologists on the team that visited Bladen on this trip and all the archaeological artefacts were left undisturbed.



Picture: Bladen River (Chris Jones).

Bladen 1 (*Co-ordinates available from IA*)

A large dry resurgence cave with a lower stream. The stream was not entered but could be followed. A dry passage heads uphill into hillside.

Also referred to as “Swiss Cheese Cave” and according to BFREE source it has been “*travelled through cave for c 50 minutes and did not reach the end*”².

The cave was probably explored and surveyed by Tom Miller in 1994³ under a different name.



Picture: Bladen 1 Entrance (Andy Lewington).



Picture: Bladen 1 Main Chamber (Andy Lewington).

² Dan (BFREE), personal conversation in the field.

³ Mark Abramuik, personal conversation in the field.



Picture: Bladen 1 shell stream floor (Andy Lewington).



Picture: Bladen 1 calcite flows (Andy Lewington).

Bladen 2 (*Co-ordinates available from IA*)

Bladen 3 (*Co-ordinates available from IA*)

Bladen 4 (*Co-ordinates available from IA*)

A cliff line follows a path, with a number of entrances up to 3m high. Upstream there were many more holes, all those checked were short.

Bladen 5 (*Co-ordinates available from IA*)

A low entrance under a 5m high boulder, that looks like a sink. The passage gets small after a short distance.

Bladen 6 (*Co-ordinates available from IA*)

In the cliff face to the left of path. A cool draught emanates from the cave but there is no obvious way on.



Picture: Bladen 6 entrance (Andy Lewington)



Picture: Bladen 6 chamber (Andy Lewington)

Bladen 7 (*Co-ordinates available from IA*)

A 1.5m high entrance next to the path. The passage lowers to a crawl, but no draught. Further caves upstream had no obvious way on.

Bladen 8 (Keyhole Cave) (*Co-ordinates available from IA*)

In the cliff face on river right, a swim required to cross the river to access it. Cave is a series of loops. There cave contains a lot of crabs.



Picture: Bladen 8 entrance (Andy Lewington)

Bladen 9 (Co-ordinates available from IA)

A large shakehole above Quebrada de Oro camp. The camp is not currently used due to the proximity of a Harpy eagle nest.

The shakehole has a 60m high cliff on the uphill side, and the lower side is a walk down. There is no obvious way on at the base of cliff. On the right side (facing uphill) there is an entrance that draughts with a loose climb to access it.



Picture: Bladen 9 (Andy Lewington)



Picture: Bladen 9 (Andy Lewington)

There is another shakehole nearby that has vertical sides all around, it was not visited on this trip.

Bladen 10 (*Co-ordinates available from IA*)

Teakettle Camp (*Co-ordinates available from IA*)

At Teakettle camp the river Bladen resurges from multiple places in the bank on river right. There was no way in to any of these springs.

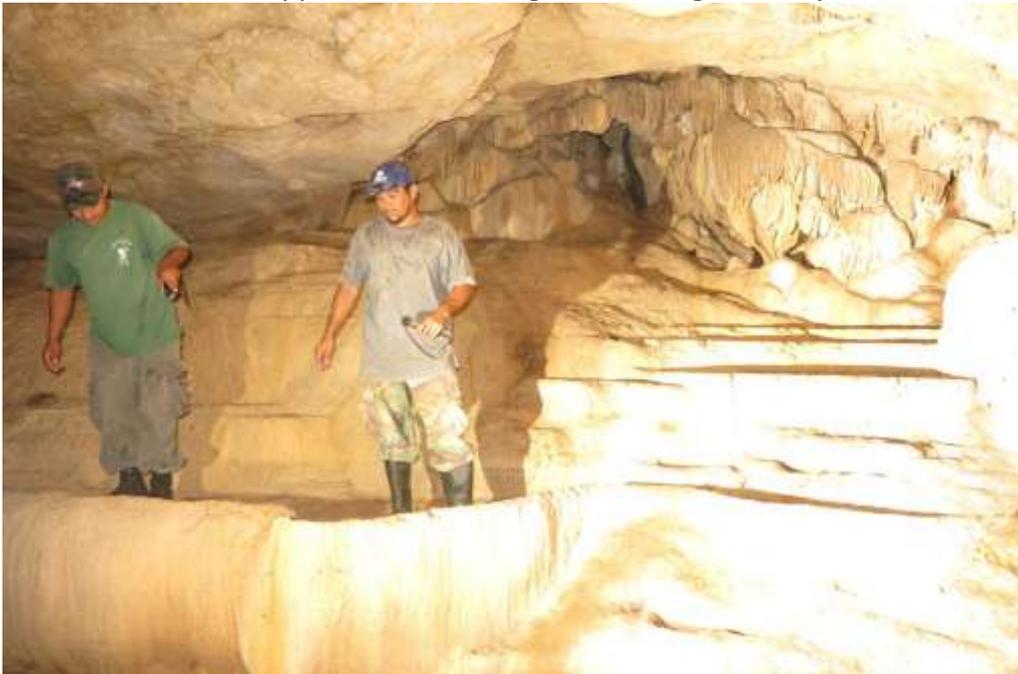


Picture: Springs at Teakettle camp (Andy Lewington)

Bladen 11 (*Co-ordinates available from IA*)

Cave is above resurgence. 50m above the main resurgence a rock alcove contains a calcite slot which leads to walking passage with regular deep solution holes in the ceiling up to 2m in length (there was guano beneath each hole indicating use by bats although there was no staining in the holes), Mayan artefacts (pedestal, pottery fragments, displaced stalactites); evidence of digging by archaeologists (recent clean cut marks in mud).

Two entrances to cave, approx. 200m in length. No draught or way on was found..



Picture: Bladen 11 (Andy Lewington)



Picture: Bladen 11 main passage (Andy Lewington)



Picture: Bladen 11 guano (Andy Lewington)

Bladen 12 (*Co-ordinates available from IA*)

A low entrance 30m right and 5m down from the entrance to Bladen 11. A low crawl becomes too tight after 10m.

Explored west from here for about for about 20 min. Rock outcrops but no caves.

Bladen 13 (*Co-ordinates available from IA*)

A small resurgence cave. The obvious way on becomes too tight. An alternative entrance 8m higher on the right, down through slot leads to stream. Upstream leads to 50-80m of thigh deep water trending SSW, ending in a sump with a possible duck. Abundant crayfish approx. 20-30cm long. The water flowing out of the

entrance flows down to the Bladen and has coated everything including tree roots in a thick deposit of calcite.

Evidence of Mayan use on flat area outside around entrance (piles of shells), also some evidence of cleared ground, possibly as part of recent archaeologists work.



Picture: Bladen 13 entrance (Andy Lewington)



Picture: Bladen 13 (Andy Lewington)

Bladen 14 (*Co-ordinates available from IA*)

Bladen 15 (*Co-ordinates available from IA*)

There are 3-4 rock shelters in an 80m long outcrop, on the North bank of the river bed (river left). One entrance has a non-limestone rock placed in the entrance chamber. There are 4 large but short phreatic passages.

There is an outcrop 80m long with lots of small phreatic tubes. Possible Mayan objects placed in the most western of these shelters.



Picture: Bladen 15 entrance (Andy Lewington)

Bladen 16 (Co-ordinates available from IA)

A resurgence cave. The entrance is to the left and just above the resurgence. Stream below resurgence has abundant calcite. Dry entrance with cleared small chamber containing a dark rock in the centre and a small slab inclined against the wall. Leads to river passage with walking and stooping trending NE for 100-150m at which point a deep pool has to be crossed. The passage continues beyond. There is a small draft in the cave.



Picture: Bladen 16 entrance (Andy Lewington)



Picture: Bladen 16 (Andy Lewington)

Bladen 17 (*Co-ordinates available from IA*)

Bladen 18 (*Co-ordinates available from IA*)

Bladen 19 (*Co-ordinates available from IA*)

A dry creek with a lower small canyon containing many small rock shelters. Not all checked. No obvious resurgence at top.

Bladen 20 (*Co-ordinates available from IA*)

A possible resurgence with an obvious draught. No entrance found (could be multiple small entrances or hidden above).

Bladen 21 (*Co-ordinates available from IA*)

A series of cliffs on the South of river bed. Checked lower entrances only, all short.

Bladen 22 (*Co-ordinates available from IA*)

Possibly the entrance to the underground Bladen river. Located in a rock shelter 100m upstream from resurgence. 5m pitch (not descended) leads to water in a large chamber, trending SSW. The water looked deep and slow moving. There may be a way in to the cave upstream of the Teakettle and possibly other entrances upstream of this point on the same side of the dry Bladen river (river right), these were not explored.



Picture: Bladen 22 (Andy Lewington)

Bladen 23 (*Co-ordinates available from IA*)

Located by Calera camp, investigated on the return back to Bladen Ranger station. There is a long line of cliffs alongside the trail with multiple entrances. Bladen 23 to 30 are in the same line of cliffs.

Bladen 24 (*Co-ordinates available from IA*)

Bladen 25 (*Co-ordinates available from IA*)

Series of rock shelters up to 5m long. Large depression half way along leads to large phreatic passage, window out of rock face. Small chamber below contains Mayan pot.

Bladen 26 (*Co-ordinates available from IA*)

A 1.5m entrance at foot of cliff can be followed to a steep mud bank from the top of which a small passage descends steeply. Down this leads to meanders and a small squeeze beyond which water can be heard. Lower level is close to the level of the main dry river bed. Second entrance is Bladen 27. The bedrock hosting the caves around the Bladen river is a mixture of brecciated and bedded carbonate, and at this site it is a deep pink colour.



Picture: Bladen 26 entrance (Andy Lewington)



Picture: Bladen 26 (Andy Lewington)

Bladen 27 (*Co-ordinates available from IA*)

A small hole on RHS of large alcove. A crawl joins Bladen 26.

Bladen 28 (*Co-ordinates available from IA*)

A large opening. A steep slope to right leads to a second entrance. To the left is main passage, steeply up to climb becomes too tight. Before this on right is a 2.5m climb with red mud. At the top is a Mayan pot and 4 bones.

Slightly downstream of this entrance is another rock shelter with a pestle and mortar on a large flat rock.



Picture: Bladen 28 entrance (Andy Lewington)



Picture: Bladen 28 pottery (Andy Lewington)



Picture: Bladen 28 (Andy Lewington)

Bladen 29 (Co-ordinates available from IA)

A large phreatic passage. Chokes after 80m.

Several interconnected large holes in cliff face. Several high up which were not explored.



Picture: Bladen 29 entrance (Andy Lewington)

Bladen 30 (Co-ordinates available from IA)

Contains alcove with pestle and mortar, pot, shells.

Section of cliff east of Bladen 30 is broken cliff, unchecked for caves. Dry river bed east of this not checked.

Conclusion

The major objective of the expedition was to being initial reconnaissance work in the Bladen Nature Reserve. This was undertaken and a number of sites visited and logged.

Although there is still a lot of potential for further work and discovery in the area, it must be noted that a lot of exploration has been undertaken in the area previously. Frustratingly the information is difficult to obtain, being either unpublished or out of print. Future work in the area would benefit from a concerted effort to centralise all available information and make available to authorised groups working in the area.

Elsewhere Tiger Cave continues to provide new unexplored cave each year, but an excellent lead discovered but not yet completed in the Roaring River section of the cave.

Su Sil 'Ha was also an exciting new discovery, with a number of leads left to explore.



Picture: Downstream Yax 'Ta 'Ha. (Phil Walker)

Acknowledgements

The 2013 expedition was organised and run with thanks due to the following;

In Belize:

Dr John Morris, Institute of Archaeology,

Lee Mcloughlin, Ya'ache Conservation Trust

Maarten Hofman, Ya'ache Conservation Trust

Ramon Pop, Basillicus Choco, and Edwin Choco, San Pedro Colombia village guides.

Victor Bonilla, Marcus Tut, guides for Bladen River

Zac Cal, Pastor Cayala, guides for Palmer Camp

In the UK:

South Wales Caving Club,

Toby Dryden, who spent a week before and after the main expedition, making essential arrangements for the expedition.

Appendix A: 2013 Expedition Log

The following are brief extracts from the expedition journal.

22 March 2013

Depart UK- US AB, PW, AN, CJ, DP, AL, LG, TE
 Left extensive snow and associated chaos in the UK, managed to have several different flight combinations between us despite all using the same booking number. But all kit was shuffled between the team and Andy's hand luggage of lead.

23 March 2013

US to Belize AB, PW, AN, CJ, DP, AL, LG, TE
 Team and kit eventually all met up in Belize, arriving spread across the three arriving flights. Bus to Punta Gorda and meet TD.

24 March 2013

Trapped in PG Whole team
 No vehicles available and no buses on Sundays. Managed a meeting with Lee from Ya'ache

25 March 2013

Move to San Pedro Columbia. Unpack into one house at the Choco's, not much room.

Tiger Cave AN, CJ, LG, TD, TD

26 March 2013

Bladen Forest Reserve, Golden Stream- Raspaculo Camp AB, AL, TE, PW

Fast walk in, a short wet season river cave was explored through the hill. Some rock shelters were visited, no great cave potential, but some archaeology. Nice campsite, but early stop.

27 March 2013

Bladen Forest Reserve, Raspaculo Camp – Palmar AB, AL, TE, PW

A good look at some sites near Raspaculo camp, then another fast walk up and over. Close to some major features on the map, but unable to reach them.

Living Creek Camp, Columbia reserve AN, CJ, DP, LG

Ramon's cave (Yax Ta Ha) Surveyed upstream, until the cold stopped exploration

28 March 2013

Palmar Camp- San Pedro Columbia AB, AL, TE, PW
 Fast walk out and very hot along farm roads.

Living Creek Camp, Columbia reserve AN, CJ, DP, LG

Ramon's cave (Yax Ta Ha). Explored and surveyed dry series to tie The River series to the entrance

29 March 2013

Tiger Cave AB, AL, TE, PW

Due to low water levels the terminal sump was revisited, though still too deep to freedive.

Living Creek Camp, Columbia reserve AN, CJ, DP, LG

Su Sil Ha

Brief visit, couldn't complete descent of the pitch need to return with more kit.

30 March 2013

Rest day

31 March 2013

Living Creek Camp, Columbia Forest Reserve AB, DP, PW

Ramon's cave (Yax Ta Ha). Surveyed upstream to sump

Relocate base to PG

1 April 2013

Living Creek Camp, Columbia Forest Reserve AB, DP, PW

Ramon's cave (Yax Ta Ha) Climbed up and over to beyond upstream sump, then downstream to look at leads and follow filthy pitch bypass.

Bladen Reserve AL, AN, CJ

2 April 2013

Living Creek Camp, Columbia Forest Reserve AB, DP, PW

Su Sil Ha

Bladen Reserve AL, AN, CJ

3 April 2013

Columbia forest reserve – PG AB, DP, PW

Bladen Reserve AL, AN, CJ

4 April 2013

Rest day AB, DP, PW, LG, TE

Bladen Reserve- PG AL, AN, CJ

5 April 2013

Depart LG, TE

Tiger Cave CJ, DP

Climb from Roaring River led to The Growler

Kangaroo Cave AB, AL, AN, PW

Lower water levels, and minimal Hydro generation, swam until sumped, didn't reach skylight marked on old surveys.

6 April 2013

Tiger Cave AN, CJ, DP

Climbing into black space on LHS in entrance series

Bat Cave AB, AL, PW

Surveying to tie it into Tiger Cave

7 April 2013

Depart AN, CJ

Vehicle breakdown= rest day AB, AL, DP, PW

8 April 2013

Depart AB, AL, DP, PW

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 2013 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.

Access to the Bladen Nature Reserve additionally requires the permission of the Belize Forestry Department and the submission of a suitable research proposal. This must be submitted at least 3 months prior to the start of any expedition

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.

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 and this continues to increase each year. 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: Cave Locations

The list below summarises grid references taken during the 2013 expedition.

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

Appendix E: Contacts

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