

La Texa 2008



Figure 1: Earlene Armstrong and Conál McCartan overlooking the Carres Gorge, Picos, Spain – Photo: Stephen McCullagh

Irish Cavers in Spain

1. Introduction

For the past 48 years Oxford University Caving Club (OUCC) have been visiting the Pico D'Europa and have been involved in discovering of a number of 1000m deep caves. One of these caves was Pozu Del Xitu (-1139m) of which the exploration account is detailed in the classic book 'Beneath the Mountains'. This book has generated interest in exploration caving for many cavers, but due to the restrictions that are placed on caving in this area, not many get the chance to do so. So given the opportunity, it was difficult to refuse!

This opportunity was first presented to Aileen and Stephen during a rather eventful caving trip down Shannon Cave in April 2008. Hilary Greaves, an Ex-OUCC member, mentioned the expedition she was planning to the Picos in July of that year. With some preliminary plans made during the next week and with additional team members from Ireland recruited, we were ready for the trip.

2. La Texa 2008 Expedition Summary

The aim of the Texa expedition was to continue exploration of Asopladeru la Texa. Two streamways, believed to be distinct, were known in the lower section of the cave system. Four objectives were identified prior to the expedition: diving three sumps (lower streamway downstream sump, upper streamway upstream sump and upper streamway upstream sump) and bolting one waterfall (lower streamway upstream limit). The waterfall bolting was originally identified as a potential lead for the dry cavers.

The Lower Streamway downstream sump was dived to a depth of 43m (extending the explored depth of Asopladeru La Texa from 966m to 1009m, and of Sistema Julagua from 1,061m to 1,104m. At the limit of the exploration, the passage is still descending, with no immediate sign of leveling out. It was decided that, with the diving equipment available diving the sump beyond this depth was not feasible.

The Upper Streamway upstream sump was passed (40m length, 10m depth). Beyond the sump, continuing stream passage was explored for 250m, terminating at an 8-10 climb requiring bolting.

The Upper Streamway downstream sump was passed (70m length, circa 10m depth); a sump bypass was then immediately discovered. Beyond the sump, continuing stream passage was explored for 300m, down several pitches, to connect with the waterfall at the upper limit of the Lower Streamway, which we had planned to bolt climb. This development came initially as a surprise, since previous research had suggested that the 'Upper Streamway' and 'Lower Streamway' were distinct watercourses.

Two further dry-leads were also explored:

1. A bolt-climb project from the top of Knife Pitch, near the downstream limit of the cave, was initiated. Circa 8m were bolt climbed to what turned out to be a solution pocket.
2. A bolt-climbing project from the base of Knife Pitch was initiated. An aven at this location had been noted in 2005. The 38m to the aven was bolted over several days in 2008. The aven led to a high-level horizontal passage, whose size and character suggest that it is a continuation of the large

phreatic passage that runs from camp to Knife Pitch. Despite the fact that the lead was wide open and ongoing, exploration was called off after a few hundred metres, as the passage is very well decorated with selenite bushes. Oxford University Caving Club intends to recruit a good photographer to document the formations for their return trip in 2009. They also intend to lay conservation tape to preserve as many of the formation as possible when undertaking further exploration.

Personal Development Summary

The cavers participating in this expedition are the next generation of Irish cavers. For two members of the Irish contingent of this exploration, half of the team, this was their first expedition abroad. Both inexperienced cavers caved to a depth of at least -200m. One caved to -965m, and increased his personal caving record from several hours to three days. Indeed, previous to this, only one of the team had been on more than one expedition abroad. Therefore, the expedition provided a valuable opportunity for all the members involved to advance their caving, leadership, surveying and organisational skills.

In terms of development of Irish female caving, both female cavers took an active role in the expedition. One spent several days in Julagua assisting with the diving projects and aiding with bolt-climb exploration, while the other acted as the expedition Medical Officer, assisted with the dye-tracing experiments and assisted OUCC with the de-rigging of Fisca Chicura.

3. Geography

The Picos de Europa is a large range of mountains located between Oviedo and Santander in the Asturias region (Principado de Asturias) near the Northern coast of Spain (Figure 2).



Figure 2: Map of Northern Spain showing the location of the Picos.

The mountains are mainly composed of limestone and exhibit areas of extremely impressive areas of alpine karst. The highest peak in the region is Torre de Cerredo (2648 metres). The area appears to be popular with mountaineers, climbers and mountain walkers (of which we saw hundreds) and has a large amount of well sign-posted tracks.

The high mountainous area that comprises the Picos de Europa is separated into three distinct areas; the Central, the Eastern and the Western massifs. The OUCC have for most of the years that they have expedited in the Picos focused their attention on the Western Massif in an area that is boundaried to the North, South and East by lowlands. One of the most impressive sights when you are in this area is the presence of the mile-deep Carres gorge which separates the Western massif from the Central massif (Figure 3). At the bottom of this impressive gorge, Cueva del Culiembro, one of the main resurgences for the Western massif is located.



Figure 3: Overlooking the Carres Gorge (Photo: Stephen McCullagh)

The area that OUCC have prospected in for the last few years is a huge bowl shaped area located near the Ario refuge in the Jou de Ario (Figure 4). As part of OUCC's continuing effort in the area they have conducted numerous water-tracing experiments in the area and have proven that most of the water from the Ario area emerges at the Culiembro resurgence.

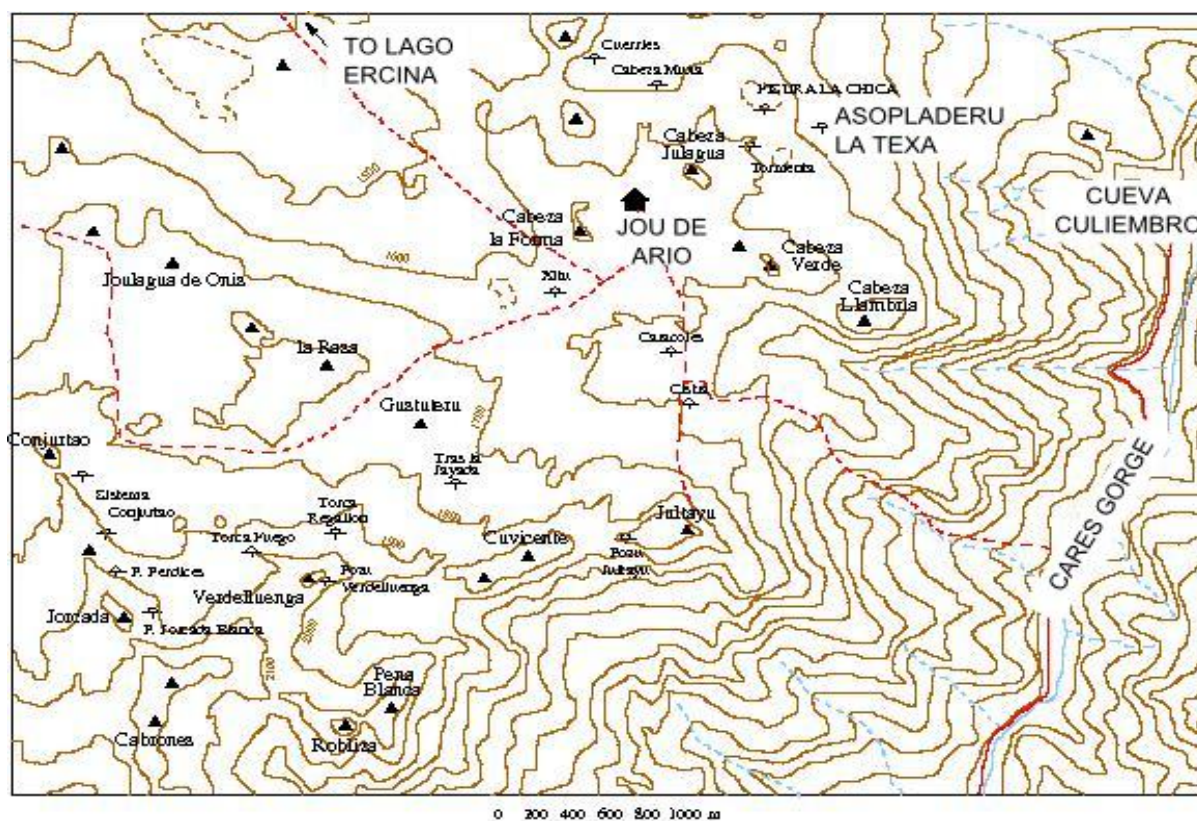


Figure 4: Area Map for the Jou de Ario

OUCG have also conducted dye tracing studies in the cave Asopladeru La Texa. The experiment, which was repeated during the La Texa 2008 expedition, has proven that a hydrological connection exists to Culiembro. Over the many years it has been a long term goal of expeditioners in this area to find a direct connection between the Ario area cave entrances, of which La Texa is one, and Cueva Culiembro. Such a connection would represent a major breakthrough, and would create a spectacular through-trip of some 1200m vertical distance between the top entrance and the resurgence. The aim of the La Texa expedition was to achieve that major breakthrough.

4. Expedition Members

Irish Cavers

Stephen McCullagh

Aileen Connor

Earlene Armstrong

Conál McCartan

Damien Datry [*Honorary Irish Member*]

Other Expedition Team Members

1. Anatole Dupont
2. Andrew Sewell
3. Andrew Wright
4. Chris Jewell
5. David Magdalena
6. Dmirty Parshin
7. Hilary Greaves
8. Ilya Akmekshin
9. Noel Snape
10. Paul Windle
11. Pete Eastoe
12. Peter Whitaker
13. Phil Rowsell
14. Rich Bayfield
15. Richard Overton
16. Rob Garrett
17. Rudi Debbaut
18. Rudi Debbaut
19. Simon Cornhill
20. Svetlana Klimenko
21. Tony Seddon
22. Vladimir Solomentsev
23. Will Stewart

5. Expedition Diary

Date	Expedition Diary
Saturday 05-Jul-08	AC, SMC and CMC fly from Belfast to Stansted and then Stansted to Oviedo. We unexpectedly met Gareth Phillips from the OUCC expedition. Travelled to Gijon and visited Decathlon before traveling to Los Lagos. 4 hour hike up-hill before arriving at campsite close to Midnight. Set-up tents
Sunday 06-Jul-08	AC, SMC and CMC restock campsite with food from Los Lagos
Monday 07-Jul-08	SMC, AC and CMC first trip into La Texa at 2 pm. AC and CMC exit after 10 hours
Tuesday 08-Jul-08	SMC exits at 4 am. Back at campsite 6:30am EA catches flight to Oviedo via Stansted DD misses flight to Stansted SMC & CMC travel to Oviedo airport to collect EA and DD SMC, CMC & EA arrive back at campsite 10 pm
Wednesday 09-Jul-08	SMC goes shaft bashing in High Picos area around Verdelluenga. AC restocks restock campsite with food from Los Lagos
Thursday 10-Jul-08	EA, SMC, CMC & DD walk down to the bottom of the Carres Gorge to install charcoal detectors at the Culiembro resurgence. AC enters La Texa with HG, TS & RB to sherpa dive give and check out high level leads.
Friday 11-Jul-08	AC, HG, RG, & TS sherpa dive gear to downstream sump. TS dives downstream sump with assistance from HG. CMC, DD, EA & SM go shaft bashing around Verdelluenga
Saturday 12-Jul-08	TS dives upper downstream sump with assistance from HG. RG bolts up a high level lead above Knife pitch, belayed by AC CMC and DD enter Poze de La Texa with supplies for campsite.
Sunday 13-Jul-08	SM & EA go to Pozu de Chicago to check out leads at bottom and help OUCC derig the bottom half of the cave. No leads found at bottom. 660m deep cave derigged to base camp at -380 m. AC exits La Texa with RG.
Monday 14-Jul-08	AC restocks campsite with food from Los Lagos
Tuesday 15-Jul-08	SM Enters Asopladeru La Texa AC goes shaft bashing in Verdelleunga
Wednesday 16-Jul-08	High-Level Extension found AC and EA collect gear from La Texa entrance.
Thursday 17-Jul-08	SM Exits Asopladeru La Texa AC & EA porter gear to Los Lagos
Friday 18-Jul-08	SM, EA, CMC, AC & DD decamp from Ario and go to Oviedo for last night in Spain
Saturday 19-Jul-08	SM, EA, CMC and AC flight back to Belfast

6. Personal Caving Diary – Damien Datry

Wednesday 09/07: I left Belfast at 6h15am, arrived to Asturias airport at 3h15pm, Oviedo at 4h15pm (first tapas and beers while waiting the 6pm bus to Cangas), and Cangas de Onis at 8h00pm. I met an English guy called Matthew, shared a cab with him to Lagos Ercecina. We started hiking up Ario at 10pm. Clear night.

I arrived to camp around 2h30am after a hard hike (32kg bags), Matthew set his bivvy half way down offering me a dram of whisky before I left. I pitched my tent in the Irish bowl, eat a bit and went to bed around 3am.



Figure 5: The Irish Bowl at the campsite - Photo: Damien Datry

Thursday 10/07: I woke up at 10am, nice weather, surprised the others by my presence. I met Hilary, Tony and other members of the team.

Steve, Earlene and Conál offered me to go for a long hike with them down to Culiembro spring to place dye receptors, why not? I haven't walk enough yesterday!

Trea's canal is impressive and long. Steve forgot his walking pole somewhere while making pictures. First sight of vultures waiting for us to fall...refreshing spring half way down. There were loads of tourists in the Cares gorge and girls with bikini tops. The detectors were placed around Culiembro spring: Conál and Steve went upstream in deep water, I stayed downstream in shallow water (I'm not dirty enough yet to bear the 8C water...). Steve managed to keep his camera out of the water like a military would save his rifle. Conál and Steve then had a dip from a wooden bridge in the blue water of Cares. Surprisingly they were not long to get back to the river bank! I just wash my hair while the others get rid of their 5-day mud and dirt.

We walked to Cain in the hope of catching a bus to avoid the ascent of Trea's canal (with the excuse of keeping strength for tomorrow's shaft bashing...). Unfortunately no buses in Cain till the morning. We had a pint in a local bar as a cold comfort. The bartender told us that Cangas is 79km from Cain and that a cab would cost 100€. No options but walking back to the camp. Steve dropped his camera while trying to take a group pictures, won't use it anymore...After yummy tortilla bocadillos, we set off to the camp. It was a long hike back, Earlene lead and gave the pace. We arrived at night at the camp, ate a bit and went to bed.

Friday 11/07: misty day. We went shaft bashing with Earlene, Conál, Steve, Richard, Gareth and Rachel around Verdelluenga. Not easy to keep in touch with the mist. Steve took me for lost 2 times as I was just wandering a hundred of yards around. GPS useful once set up. Possible leads found but need digging and capping. We spotted chamois and a salamander.

We went to the refugio for a couple of beers the evening, MadPhil and Simon tried to fix the radio with the help of Dmitri and a hot nail as a solder. Cold night.



Figure 6: The Ario Refugio - Photo: Damien Datry

Saturday 12/07 : mist and sun. Conál and I got ready for a 3-day trip in Texa. I packed my meander suit and an extra furry in case we would play with water. We took food and batteries for the camp in addition of our personal bags. It looked like it was going to rain soon so we headed off quickly. The hike to the cave is annoying, especially the final scree slope. As soon as we start changing, the rain started to fall...typical! We

pack our stuff as quick as possible. A bit of faffing from me, my Daren drum didn't want to fit in my personal bag – anyway, I clipped it over my personal bag. Meanwhile Conál went down in the 1st pitch to shelter from the rain.



Figure 7: The Entrance to La Texa – Photo: Damien Datry

I met Ilya just before going down; he was hiking around to collect the over-suit he had left on a rock to dry.... He told me he thought Spain was a sunny country...

I caught up with Conál at the bottom of the first pitch, where there was a huge snow plug. I looked at my watch: 2h30pm

I let Conál lead the way as he had already been down to -350m. The two first pitches are pretty. The rigging is perfect for my size, the free-hang rebelayes are a piece of cake. The Meandro del Guaje and the two short and tight pitches before are a bit of a pain with two bags and a Daren drum, they also reminded me that the free end strap of my helmet can get stuck in my descender...

The saddle start of No Hay Crystal is entertaining and a good opportunity to take pictures. We had a first wee break after the rift before Pozu Acrobatico. (-300m)

I enjoyed the rigging of Pozu Acrobatico, the Pous Electrics were abseiled down in a shorter time than I thought. We had another break before the head of Cabó Mayau (-483m)

The 80m pitch is a nice shaft, especially at the end. Conál still leads the way; he has a very good descent pace for a beginner. We soon arrived to the Tormenta streamway, having a break before at the Vivac Place (-641m).

Putting my right foot in the water gave me a sensation of coldness, revealing a huge crack all along the heel of my boot... Damn!

We then arrived in Sala Oston where we heard voices from the camp. Arriving to the camp was a strange experience as flashing strokes of petrol stoves gave to the yellow tent the appearance of an outdoor summer disco club!



Figure 8: The luxurious campsite - Photo: Damien Datry

We met up with Hillary, Rob, Aileen, Tony who had gone down Wednesday plus Dmitry who had arrived a few hours before us (to warn Texa camp that the radio on surface needed to be fixed). Think it was 9h30pm on my watch. Just the time to put my gear away and put the food out of the bag that I was welcome in the tent with a warm plate of yummy pasta (mushroom sauce if I do remember well) plus a mixed of custard sauce with nuts.



A few discussions about who was doing what the day after and we all went to bed, Dmitri choosing to sleep outside the tent, the manly way. A bit squeezed in the tent but I had a good sleep (without cow bells, flies and the too warm morning sun).

Figure 9: Aileen Connor, Hilary Greaves and Tony Seddon enjoying camplife - Photo: Damien Datry



Figure 10: Conál McCartan in the lake below the campsite – Photo: Damien Datry

Sunday 13/07: We woke up around 9h30am, had tea with a bowl of noodles and then everybody get dressed for the day. Dmitri headed first for surface as he had to leave for Russia the morning after. Rob and Aileen did the same a couple of hour after while Tony headed to the upper streamway up-stream sump with gear to prepare a dive. Hillary, Conál and I went to the lower streamway to collect left gear from a recent dive. I quickly fixed my boot with scotch tape. The boat crossing of the first pool was entertaining and nice

formation can be seen beyond (gours and flowstone).

After passing knife pitch we soon arrived at the streamway. We had a look to the downstream sump (-890m) and share the gear between us. We then had a look to the upstream 10m waterfall that looks very promising. A bolt climb would be difficult though as the walls are full of moonmilk and the area was pretty wet. We then headed back up to the camp where we arrived around 3h30pm. Hillary joined Tony for the dive while Conál and I went to rig an undescended pitch round the camp, the one used as the toilet actually...Unfortunately the lack of rigging equipment (especially slings) forbade us from going further. A free climb down would have been dodgy due to the slippery-sticky-stinky character of the area. To pass the time, I showed Conál how to place a bolt.

Tony and Hillary went back at 9h30pm-ish from the dive that looks promising (-10m but difficult route finding), they'll give another go the day after. They were both pretty cold and wet. Everybody went to bed after a plate of pasta, custards and a glass of whisky.

Monday 14/07: We woke up at 9am for a big breakfast and loads of tea. Then we started to pack our gear as Conál and I were to head out. I put my personal bag in a kit bag and kept some room to put carbide rubbish in on the way out. After another bowl of noodle (Hillary tried to feed us up), we headed off. A bit of faffing from me again as I forgot my glasses at the camp. Fortunately I was just at the bottom of the first pitch up when I realized. Conál started going up while I went back to the camp to collect them. There I met Tony and Hillary who were getting ready for the dive. It was 12h30pm on my watch.

I caught up with Conál somewhere before La Pica pitch, where I lead the way then. We had a break before El Fet Diferencial to drink tea from my thermo mug and have some of the cookies left there from an old bivouac. I think it was 3h30pm on my watch.

Again, I enjoyed Pozu Acrobatico. I let Conál lead after the rift of El Jardinete, where I banged my elbow on the ground when I broke a collapsed block and fell. Passing the saddle of No Hay Crystal

with bags can be quite artistic. I lead up to the Meandro del Guaje which is way more shitty on the way back and then Conál took back the lead, suddenly excited by the nearby daylight.

As usual with bags, I've been very careful not to take the ropes up with me in each pitch, but I apparently didn't put back the one in the second pitch. I thought I did but I had actually dragged the rope from the first rebelay where I thought it was from the last. Fortunately, nobody had to go out after us but the team going down after us wasn't very happy with that...apologies.



Figure 11: The view from the entrance of La Texa - Photo: Damien Datry

We came out of the cave at 8pm, with a bright sun and singing birds. Was a real pleasure as rain would have been horrible. Time to change, to pack the gear in the rucksack bags and to enjoy the view on the Cares gorge and we set off for the hike up to the camp. This was really a pain in the arse. I would have rather preferred to prussic up 300 other metres than carrying the caving gear up the bloody scree slopes. Think we arrived at camp for dusk, around 10pm and I dropped my sun glasses on the way on, somewhere above the Ario bowl.

Tuesday 15/07: I wake up early as usual because of the warm sun. I had breakfast and sorted all my gear to dry. Then went to look for my sunglasses. I found them somewhere on the track, probably chewed by a cow as one of the glass out of the frame and covered in drool... I stopped at the cow spring on the way back to wash myself. After enjoying tea and sun, I went for a hike in the afternoon near the Cabeza Verde area, should have been a short hike just to give a phone call but the surrounding views made me go from one summit to another. It wasn't handy in shorts and sandals. I hiked for more than 4 hours and took nice pictures. I spotted vultures including an Egyptian one. I got nasty sunburns on shoulders and knees (that hadn't happened for a while).

I went for a drink with Conál and Earlene at the refugio. There was no more beer so we were obliged to drink a coke. Beers were said to be lifted the day after though. Went up to El Jito pass with Conál then to watch the sunset, magical atmosphere.

We met the others coming up from Cangas with food and most importantly vino tinto.

After dinner we drank a lot of it, probably too much. Hillary arrived back from Texa.

Went to bed late, staggering to my tent...

Wednesday 16/07: wake up rather late, 11am, not hungover. Nice weather again. Lazy time day, I did nothing but snoozing, eating, drinking, reading, enjoying the sun and listening to music. I packed my caving gear and its mud late in the afternoon. There was a mix of sun and mist at that time but anyway, I decided to go hiking on the Jultayu ridge, setting off at 5h30pm. I met a Spanish hiker at the beginning of the walk, Jaime from Mallorca. After a wee chat I lost him from view while ascending Jultayu. I saw a herd of rebeccos half way up. Most of them were females with their calves. I spent some time taking pictures and videos. Jaime caught up with me and told me I was crazy to walk that fast. I explained him that I had been here for a week and therefore in good shape, especially with a 3kgish bag. He thinks I am even crazier when I tell him that I've just spent 3 days in

a cave.... He lived one year in Dublin and 2 years in Auckland so had a good English, better than mine...I offered him a cigarette on the summit, it probably confirmed his beliefs on me... He headed back to the Refugio while I kept walking on the Jultayu ridge. The view from Jultayu (1940m) is fantastic. Massive drop of 1500m on a sea of mist. I headed to the other summit, Robliza (2227m). Light is beautiful, took loads of pictures. The last part before the summit of Robliza is quite scary: scrambling and climbing over the big drop.

I stayed there to watch the sunset. I took another ridge to get back to camp, pretty steep. I scared a lot of rebbecos away many times. Caught up with the refugio track and arrived at camp a 23pm. Ate a bit and went to bed.

Thursday 17/07: nice day again, plenty of sun. Earlene, Aileen, Conál and I packed up our caving gear in our rucksacks to leave the gear in the car down Lagos. We headed down at around 1pm. Nearly all the way down is in the mist. We were happy to arrive at Lagos after the crappy muddy passage and even more happy to have a beer at the bar. We also ate meat and chips with salad. We headed off up to camp at 5h30pm. I took a good pace on the way up (don't think I could have been faster actually...) and I arrived at 7pm all sweaty. Washed myself with snow and saw Steve with a muddy, beardy face arriving from Texa. He looked pretty tired but he was up for beer tonight at the Refugio. Tony arrived a couple of hours later, after having spent more than a week in Texa...respect. First thing he did was to wash in the spring designed for the cows.



Figure 12: Having a few drinks after caving - Photo: Damien Datry

We went back to the camp then to drink weird spirits bought by Rob and called <Putá Madre> (Motherf\$cker) and <Hijo de Puta> (son of a bitch), plus some good scotch.

Went to bed staggering again, wondering which tent was mine.

Friday 18/07: wake up pretty early with a sunny and warm weather. Quick breakfast and Steve, Earlene, Conál, Aileen and I started unpitching our tents and packing our gear to leave. My bag was bigger and heavier than I'd have thought. We head down around midday and arrived to the car a couple of hours after. Given the amount of gear we had between us, we decided to do 2 trips to Oviedo. Steve drove Conál and me first, stopping halfway for a 10 min recovering nap. He then dropped us in Oviedo where we started looking for a hotel to spend the night.

After everybody arrived in Oviedo, and after a first shower in weeks, we went for a great dinner in a restaurant. Then, Conál and I went to a sideria to taste the local cider before going to bed.

Earlene, Aileen, Conál and Steve were to fly to Belfast the morning after. I stayed three more days in Spain to visit the area.

7. Asopladeru la Texa: Description and rigging guide (Courtesy of Oxford University Caving Club)

Location

From the Ario camp, cross the ridge between Cabeza La Texa and Cabeza Verde. Follow the path as it descends, skirting to the right of the bowl containing orange rocks. Leave the path, and follow the ridge above; this ridge turns left, and descends over a rock arch to a col. Follow the path to the right, and then turn to the left to descend a scree gulley. Continue ahead, contouring across the shoulder of the hill, above a gulley to the left, to reach the top of another, shallow, gulley. This descends steeply, onto a steep scree slope. Descending the scree slope reaches the cave, at the top of a large gulley, overlooking the hill below Ostón. *GPS 0345070 4789670, altitude 1369m.* (Figure 13)

From the entrance to ¡No hay Cristal!

The entrance pitch (P36) lands on a large snow plug; this can be descended to a boulder floor; traversing above a hole reaches the top of the second pitch (P42); care: the hole connects with the pitch.

The pitch lands on a boulder slope. Descend boulder slope and short climb; care: rocks dislodged from the slope fall down the climb. A short passage leads to a 5m climb, best roped.

Asopladeru La Texa Sistema Julagua

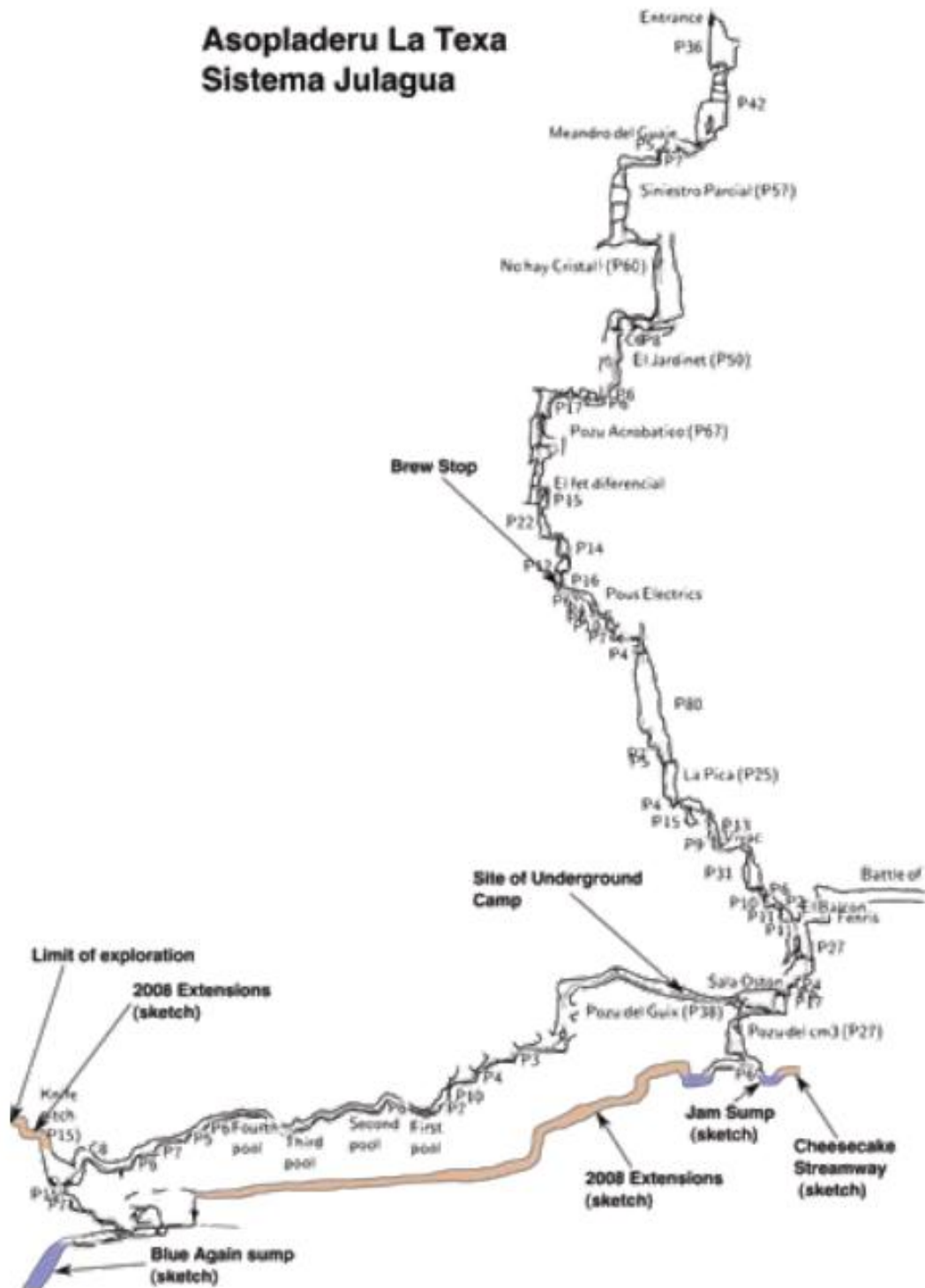


Figure 13: La Texa Rigging Guide

At the bottom of the climb is the start of a rift, Meandro del Guaje. A point squeeze leads to the base of an ascending ramp, which leads to the top of a 5m pitch; the pitch can be bypassed by a constriction and two short climbs.

Pitch	Rope	Rigging
Entrance pitch (P36)	45m	3 bolts at top, bolt rebelay at -8m and -12m.
Second pitch (P42)	50m	Bolt for traverse, bolt, three bolt traverse at -4m, bolt rebelay at -8m, bolt rebelay with rope protector at -11m, bolt deviation at -15m.
C5	10m	Two natural back-ups, natural belay.
P5	10m	Bolt and spike belays.
P7	12m	Natural back-up; bolt belay.
Siniestro Parcial (P57)	70m	Bolt for backup, bolt, thread deviation at -3m, bolt rebelay at -6m, bolt rebelay at -35m, spike deviation at -50m.
¡No hay Cristal! (P60)	80m	2 bolts for backup, bolt, two bolts over "saddle" edge, deviation at -10m, three-bolt traverse at -19m, bolt rebelay at -22m.

Ahead is a second short pitch (P7), with a constriction half way down; this pitch is also free-climbable, with care. Ahead, another ascending ramp leads to an awkward manoeuvre followed by a climb down into bigger passage. A 57m pitch, Siniestro Parcial follows. This lands on a ledge overlooking a chamber. [The water disappears along a rift in the chamber.] The way on is to follow a gallery leading from the ledge, which leads, after 20m, at the top of the next pitch, ¡No hay Cristal! (P60). The top of the pitch is a saddle-edge, which requires straddling; part way down is a three-bolt traverse along a ledge to the left.

¡No hay Cristal! to Pozo Acrobático

¡No hay Cristal! lands in a boulder-floored chamber. At the end of the chamber is an awkward 8m pitch down a rift. [This pitch can be bypassed by climbing down through boulders at the opposite end of the chamber.] At the bottom of the pitch, the passage soon leads to the top of a blind pot. The way on is to turn right, and climb over or crawl under an obstruction into a small chamber, where a 6m hand-line climb ascends. At the top is another, easier, hand-line climb. Walking forward soon reaches the top of a 50m pitch, El Jardinet, split by a ledge half way down. This lands in a rift, with a small stream, leading to two 6m pitches. An old Spanish brew-site is passed, before the rift opens out to the left. [It is possible to follow the water ahead for some way.] The way on is to ascend 4m (hand-line useful) into a continuation of the line of the previous rift. This rift is narrow at first. It again opens out to the left, but the way on is to continue straight ahead, until the top of the next pitch (P17) is met. At the bottom of the pitch, penduling reaches a traverse level, leading quickly to the top of Pozo Acrobático (P67). This is split by a ledge at -30m. Ten metres above the floor, swinging right reaches a draughting window, El Fet Diferencial. [The way on at the bottom of the pitch is blocked; the water is lost at this point.]

Pitch	Rope	Rigging
P8	10m	2 bolts.
C6 up	10m	Natural belays.
C5 up	10m	Natural belays.
El Jardinet (P50)	75m	2 bolts, bolt rebelay, bolt rebelay at –10m, descending to ledge at –25m, 3 bolt traverse, bolt rebelay to left at –35m, where rift narrows.
P6	10m	Bolt backup, bolt.
P6	10m	Two natural belays.
C4 up	8m	Natural belays.
P17	32m	Two bolts at start of ramp, bolt at –2m, bolt at –5m, bolt at –9m.
Pozo Acrobático (P67)	75m	3 bolt traverse, 1 bolt, bolt rebelay at –15m, spike rebelay on ledge, bolt rebelay at end of ledge, bolt rebelay 10m lower, bolt rebelay at –56m by window, rope tied off to natural belay.

Pozo Acrobático to Cabó Mayau

The window on Pozo Acrobático is the start of a short tube, leading to the top of a 15m pitch, slightly constricted at the top. This lands in bigger passage, from where a 22m pitch follows almost immediately. An inlet enters at this point, the site of a brew-stop in 2005.

The passage continues ahead, as a series of eight short pitches, Pous Electrics (P14, P12, P16, P6, P10, P10, P7, P4), separated by fairly easy rifts. At the bottom of the final pitch, traversing forward leads to Cabo Mayau (P80).

Pitch	Rope	Rigging
P15	20m	2 bolts.
P22	30m	2 bolts, bolt rebelay at –11m.
P14	20m	2 bolts on balcony.
P12	18m	2 bolts.
P16	22m	2 bolts, spike and bolt on ledge at –10m.
P6	12m	2 bolts.
P10	20m	2 bolts, spike deviation.
P10	15m	2 bolts.
P7	11m	2 bolt Y-hang.
P4	7m	Natural back-up, bolt.

Cabó Mayau to the Tormenta Streamway

Cabó Mayau descends via two ledges before opening out into a magnificent shaft. This is followed by two short pitches (P7, P5), and a bigger pitch, La Pica (P25). A rift descends a short climb, and traverses over a blind pot. Ahead, the ceiling dips to meet the floor, but there is a way on through a slot to the right. Scrambling and traversing leads over a blind 15m pitch, to a 13m pitch, followed immediately by a 9m pitch. This lands in a chamber where the SIE set up a camp. A rift is then followed to the next pitch, El Espajo (P31). Further rift leads to two more pitches (P6, P10), followed by more rift and two more pitches (P2, P11).

Suddenly the end of the rift is met at a balcony overlooking a large chamber, with the sound of a streamway below. An 11m pitch descends to a ledge, with a small inlet entering from above. [To the right is a blind pitch of about 12m.] The way on is through a "door" which leads to the top of a 27m pitch. Another small inlet is met just beyond the door. The pitch lands on a large ledge at -20m, where the Tormenta water enters. A final rebelay down a wide rift passage lands in the streamway.

Pitch	Rope	Rigging
Cabó Mayau (P80)	105m	2 bolts, wire belay, bolt rebelay at -9m, bolt rebelay on ledge at -12m, rebelay off huge spike at -22m, spike rebelay at -35m.
P7	10m	Bolt and spike Y-hang, spike rebelay.
P5	8m	Two spike belays.
La Pica (P25)	40m	Bolt back-up, spike belay, spike belay for main hang, deviation at -6m from distant spike, spike rebelay at -15m.
Traverse	20m	Four natural belays.
P13	20m	Natural and bolt, bolt rebelay.
P9	15m	2 bolts.
El Espajo (P31)	43m	1 natural, 1 bolt, bolt and natural at balcony at -3m, bolt rebelay at -14m.
P6	10m	Bolt and natural.
P10	17m	2 bolts, bolt at -5m.
P2	5m	Bolt.
P11	15m	2 bolts.
P11	21m	2 bolts for traverse, bolt for hang, bolt rebelay at -5m.
Blind pitch (P12)	15m	Two bolts.
P27	36m	Bolt back-up, two naturals above door, bolt rebelay, bolt deviation at level of ledge, bolt rebelay 3m lower.

The Tormenta Streamway and Camp Passage

Following the water, a short pitch is met (P4). Ahead is another short pitch on the right (P6). Penduling from the bottom reaches a dry passage leading to a window, which is the start of a 17m pitch in a large chamber, Sala Ostón. Two routes diverge in Sala Ostón. Following the water, descends a 27m pitch, Pozo del cm³. A 6m pitch then lands in a large streamway, believed to be the water from Cabeza Muxa. The streamway sumps quickly in both directions. Downstream a 15-20m pitch, Diver's Dilemma, can be ascended to reach a high level bypass. This eventually connects, via some other short pitches, to top of the waterfall at the upstream limit of the Lower Streamway. Diving the Upstream Sump (Jam Sump) leads to the Cheesecake Stream, this is comprised of 250m of ongoing passage, ending at an 8-10m climb yet to be bolted.

To access the campsite and Lower Streamway from Sala Ostón, climb up to the left, and then traverse above the streamway. A short pitch up is met, at the top of which is a tyrolean traverse across a 2m wide chasm, leading to the camp passage, a 5m diameter, sandy-floored phreatic tube. The phreatic tube soon ascends a steep ramp (hand-line climb); [at the top, a 5m bolted climb reaches a tube, which soon chokes.] A descending ramp (hand-line climb) continues along the main tube. This reaches a balcony overlooking a shaft.

Pitch	Rope	Rigging
P4	7m	2 bolts.
P6	10m	1 natural, 1 bolt.
P17	30m	Two naturals at start of traverse, spike for traverse, bolt belay, bolt rebelay at -4m.
Pozo del cm ³ (P27)	48m	2 bolts, 3 bolt traverse at -5m, bolt at -13m, bolt at -15m.
P6	10m	2 bolts.
P6 up	10m	Backed up to traverse, bolt, tied off to natural at bottom.
Tyrolean traverse	10m	Two bolts on each side.
Hand-line climbs	25m	Two bolts.

Mud Mines

The shaft can be crossed via a traverse Songs of Praise, to the left. The traverse lands on a ledge overlooking the shaft. To the left is a choke that appears not to go. Passing behind a large boulder leads to the other side of the ledge, from where a phreatic passage continues. The passage descends a 15m pitch, followed by a 10m rift climb. Ahead leads to the top of a 40m pitch, [which reconnects with the Spanish Pitches, two pitches above the pool]. Continuing ahead leads to a complex junction and the bottom of a pitch One Man and his Dog. The passage continues through an old mud sump, to emerge at the top of a 5m pitch, overlooking the previous passage near the rift climb.

Pitch	Rope	Rigging
Songs of Praise	30m	Two bolts on first ascent, bolts on ramp, spike at top for descent, natural deviation.
P15	20m	Natural belays.
C10	15m	Natural belays.
P40	50m	Bolt, natural belays for scramble to pitch head, two natural belays, bolt rebelay part way down.
One Man and his Dog (P10 up)	15m	Natural and bolt at top.

The Spanish Pitches

A 38m pitch, Pozo del Guiz, descends the shaft, via a large ledge. This ends in an abandoned stream passage, containing large pools. Thirty metres forward, a 3m pitch drops into a pool. Twenty metres further, an awkward climb down a flake enters larger passage, where the pitch from Mud Mines enters. This leads to two short pitches (P10, P7), down to the pool.

Pitch	Rope	Rigging
Pozo del Guix (P38)	50m	Two bolts for sloping traverse, bolt for main hang, natural deviation at –8m, huge natural on ledge, spike deviation 5m lower.
P3	5m	Natural belays.
P10	15m	bolt, bolt at –3m.
P7	11m	2 bolts.

Underworld

At the pool, a small passage leads off, through small pools. This drops into a small chamber, with passages heading off in both directions. To the right leads down a climb to a 5m pitch into a chamber. [Alternatively, to the left, climbs and a short pitch lead to the same place.] A climb down through boulders reaches a small passage, which can be followed round several bends. Suddenly some water is met. The passage turns left through a duck, and meets a miserable sump.

Pitch	Rope	Rigging
P5	10m	Two natural backups, bolt.

Beyond the pool

It is possible to float across the pool: some type of buoyancy device is strongly recommended; it is very useful to rig a doubled rope across the pool, so that teammates can pull you across.

At the far side of the pool is the start of a 5m diameter phreatic tube, *Entre-lagos*. This ascends a ramp, and then descends a 6m pitch. At the bottom of the pitch is another pool; it is possible to traverse around the right hand side. The cave turns sharply left, to the north, at this point. The passage continues, descending a couple of ramps, before hitting a third pool after about 40m. This can be traversed on naturals on the left, but is best rigged with a rope for a tyrolean traverse. The passage then ascends a ramp to a fourth pool, much shallower than the previous.

Ahead, the passage suddenly changes character: the muddy floors are replaced by brilliant calcite surrounding gour pools. A single path has been trodden through this section to minimise damage. After 20m, two short pitches are met (P6, P5), which descend calcite walls, to a brilliant stal flow formation. Ahead are two more short pitches (P7, P6). The passage narrows, and then ascends a steep ramp (C8), to a narrow knife edge, the top of a 15m pitch, Knife Pitch. A hollow to the right of the top of the pitch has been bolted to a solution pocket. Knife Pitch lands in a muddy chamber; a climb to the left of the bottom of pitch has been bolted 38m to a phreatic tube which connects to a steep slope down, followed by a few more short climbs and some crawling and leads to a larger chamber containing numerous calcite formations. From here a series of pitches and further cave passage leads down. The limit of exploration is a 5m climb up, which was not pushed in 2008.

A muddy rift descends from the base of Knife Pitch. It is possible to rig a rope down here, past the remains of a choke, onto a ledge overlooking a chamber. A further pitch of 7m reaches the bottom of the chamber.

A small passage leads off from the chamber, towards the sound of running water. A climb down reaches a small streamway in a very immature passage. An oxbow is followed, before the passage suddenly breaks out at the top of a boulder slope, overlooking a much larger streamway.

Pitch	Rope	Rigging
P6	15m	Three natural belays.
P6	10m	Two bolts.
P5	10m	Two bolts.
P7	12m	Two natural belays.
P6	10m	Two natural belays.
C8	15m	Two bolts, one either side of ridge.
Knife Pitch (P15)	25m	Bolts shared with C8, bolt rebelay at -3m.
P15	25m	Rope backed-up to Knife Pitch, natural belay from huge boulder, bolt at -5m, bolt at -10m.
P7	12m	Rope backed up to previous pitch, thread belay, bolt deviation.

The Lower Streamway

Descending the boulder slope gains the streamway. The flow rate was estimated as 15l/s in 2005, although the clean-washed nature of the passage suggests that it often carries a much larger stream.

Downstream soon reaches a pool, easily passed to the left. Beyond this a much larger pool. Floating across this reaches a duck into a very small sump chamber. The sump has been dived to -42m and is still going.

From the bottom of the boulder slope, the upstream passage soon chokes. However, a passage to the left from the slope bypasses the choke. This breaks out into a 10m wide, boulder-strewn passage. Ahead, a pool is soon reached, which ends at the bottom of the 10-12m high waterfall that the Diver's Dilemma bypass connects to.

8. Expedition Caving Reports

8.1. Rigging Bounce Trip – Stephen McCullagh

It was with a bit of trepidation that I set out on this trip. This was my first trip into Asopladeru La Texa (La Texa for short) and it was a bounce trip. I had done a few deep bounce trips before and I knew that the return trip is never enjoyable. That morning Aileen, Conal and I didn't get up particularly early so by the time we got round to setting off on the walk across to the cave it had gone 10 am. Earlier that morning (Mad) Phil Rowsell, Simon Cornhill, Dmitry and Ilya had set off to rig the bottom of the cave they and it was our job was to take a large tackle sack each of camp gear into the cave as far as possible and to rerig one of the pitches at the top of the cave.

The walk over to the cave was long; in total it took two hours. Thankfully Hilary Greaves had clearly marked the route to the cave on a previous trip and there wasn't many wrong turns taken. The route involved crossing the Ario bowl and up over a high ridge between Cabeza La Texa and Cabeza Verde and down into a large valley which was dominated by a number of rocky ridges. The walk itself, apart from the initial hike up to the high ridge was all downhill following one cairn after another until the top of the final boulder slope leading to the entrance to La Texa is reached.

The boulder slope was an 'interesting' proposition as even small stones when accidentally kicked tended to race down creating mini-avalanches of TV sized boulders and if that wasn't difficult enough we also had 20 kilograms of gear each to worry about. After Conal and I had made it down safely, it was Aileen's turn, nearing the bottom a number of precariously positioned boulders started to move. Luckily a quick reorganizing of gear and a few quick footsteps took her out of danger.

At this point we got our first view of the La Texa entrance, unlike the other cave entrances we had passed it was quite obvious. Quickly getting changed into our gear I decided to go first. This first pitch dropped immediately down 35 metres onto the top of a large snow plug which was a refreshing change from the heat on the surface. Sliding down the snow and then chimneying up the opposite wall leads to the top of a series of shortish pitches. It was one of these pitches that required rerigging.

On this expedition we primarily used through-bolts so instead of using the normal self drilling spits I used a 'rock-pecker' (basically a drill bit attached to a solid base which could be hit with a hammer). This was the first time I ever used a rock-pecker so it was slow going at the start but after a while I got used to it. The awkward take off was rerigged so as to avoid a massive deviation round a sharp arrete. With this task completed we continued our way down the pitches. Conal was still a novice with his single rope technique so it took him a while to get used to carrying a bag but with a bit of persistence he quickened his pace.

The vertical part of the cave itself consisted of a set of upper pitches separated from the lower part of the cave by a tightish rift section. In 2007 when I was in Austria I had gained a lot of experience moving through rifts with heavy bags and between the three of us we were able to make light work of them. After gaining the next section of vertical cave work we decided that we should split up. I would head off on my own to bottom the cave while Aileen and Conal would go down as far as they were comfortable with and then turn round and head for the surface. With no-one to wait for I

made my way quickly down the pitches until I caught up with the bottom rigging team who were sorting out the last few pitches. Up until this point the cave was dry however after an awkward window pitch the cave joined a major rift containing a large streamway tumbling down from a hidden aven above.

MadPhil rigged the final pitch and I made my way to the bottom of the cave where I was then over seven hundred meters vertically below the entrance. At the bottom the stream flowed into a large rift however our way on was via an exposed traverse and then a climb up on rock projections to the start of an entertaining tyrolean across a large hole. We then entered the area set aside for the campsite.

This was the first time I met the two Russians Dmitry and Noel and we all sat down and had a cup of hot soup and a bowl of pasta. I had a lot of prussicking ahead of me so I decided to take in as many calories as I could. The area for the campsite looked good and MadPhil suggested I should have a quick kip and then make my way to the surface. However I was aware that I had a pre-arranged meeting for the next day; Earlene Armstrong needed collected at the airport the next day at 3 pm.

I collected a few pieces of unwanted food left from a previous camp and turned round for the long trek to the surface. On the first pitch up I misread the rebelay and ended up with my foot stuck in my foot-jammer hung up on the rope above my head. Most times this wouldn't worry me however between the weight of the bag strung beneath my legs and the length of swing required to reach the nearest ledge it required a bit of (over) exertion to pull myself up. Fortunately this wasn't a portent of what was to come and before long I found myself in a good rhythm and the pitches started passing by at a steady rate. I eventually reached the top to be met with the first glimmerings of the new day; it had taken 5 hours to get out.

Next up was the hike back to camp. With uncertainty on what cave I was doing next, I opted to hike all my gear back. This I found to my cost was a mistake as the walk back was uphill and with the added weight of muddy wet gear my rucksack contained over 20 kilograms. I eventually reached the top of the high ridge overlooking the camp to find that the Ario bowl was filled with a thick blanket of fog. I knew camp was down there somewhere so I picked the best route and made a go for it. What should have been a short walk turned into a half hour of walking around in circles until in the distance I heard the noise of people preparing breakfast. I went in the direction of the noise only to find that I was right beside my tent! Time for some rest I thought.

8.2. A Fresher's Perspective the Spanish Expedition – Conál McCartan

For me, this trip was a complete step into the unknown, I had only been caving for 9 months by the time we headed for Northern Spain and although we had done SRT caves in Ireland and Yorkshire, I don't think anything could really have prepared me for the 8 odd hours it took to reach the underground camp roughly 900metre deep into the Picos Mountain range and also the roughly the same time to get back out again to the stunning view that awaited once you ascended the final pitch!

Our trip started by flying out from Belfast to the Asturias via a stopover in Stansted. Once we arrived we picked up the hire car which turned out to be a nice new BMW hatch back. From there, we

started to make the journey towards the mountains with a small pit-stop in Decathlon and the nearby supermarket for Chocolate!

After a nice drive packed into the car with all the gear and supply of chocolate we arrived at the car park in Lago Enol and began to get sorted for the hike up through the stunning scenery towards what would be our home for the next two weeks. In typical fashion once we got out of the car the rain started to come down and of course lasted for the entire hike! During this period I also got dubbed the lovely name of 'Pinky' due to the rain jacket that I bought out of Decathlon (which was good thinking on my part, would have been properly soaked if I didn't have it!) but it really wasn't pink, just a lighter shade of red, while that's my defense anyway!! So onwards we hiked and into the darkness as day became night.

We arrived at camp around midnight and I think I did one of the quickest jobs of putting my tent up because at this stage it was still raining! And finally some rest could be had, after trying to get over the constant ringing of the cow bells from what seemed to be thousands of local Asturian cattle!

The next day we took a trip back down the 'hill' for some supplies for the camp and met some more of the English group. We also had the surprise of finding that our hire car was completely dead. So we got a set of jump leads, hooked up the hire car to the Oxford Land Rover and got the nice new BMW up and running again! Then back up the 'hill' we went with a nice backpack full of food!

On our third day in the mountains we got our gear together and started the hour hike to the mouth of the cave where all the fun would start! After following little reflective markers towards the cave and down what became known as the scree slope of death we arrived at the mouth of the cave. Then the job of getting into our gear while trying not to cut anything on the razor sharp rocks and at the same time not drop anything down the side of the mountain started and finished. We packed our dry stuff into bags and stashed it under boulders just above the entrance.

Once we descended the first pitch onto a big snow plug, Steve went ahead to do a spot of re-rigging



Figure 14: Conál McCartan prussicking up pitch - Photo: Damien Datry

be getting a new bolt setup at the head of the second pitch. Once that task was wrapped up we headed on it the dark depths of the rather warm Asopladeru La Texa cave system! This was a pretty big eye opener for me, as I had never really experience a proper 'vertical' cave like this before so it really was pretty cool to be sitting at the head of the pitches and peering over the edge just to see the two little lights of Steve and Aileen far below! One of the things I found out on this first trip was that I had over layered with my gear, having thermals and wet socks was bit over the top as I just began to seriously over heat!

With that, Steve headed on ahead as he had to drop supplies to the underground camp while Aileen and I made our way down at a more modest pace! We roughly got about 4 hours into the cave before we

decided to turn around and make for the surface,

leaving the supplies we were carrying so it would make life a wee bit easier for whoever was to carry them further on. At this stage I was really overheating and my water supply was starting to shrink! We made our way back out of the cave at a leisurely pace. During those hours I began to get into a rhythm in terms of pacing myself on the pitches, knowing how to control my ascent and limit energy usage.

Once we got to the surface, we got out of our over suit and prepared for the hike back towards camp. At this stage it was dark and we followed the little reflective markers back to camp, which was definitely an easier task with the neon lights lighting the way.

Steve then exited the cave in the early hours of the morning after doing his bounce trip!

After he grabbed a few hours sleep, Steve and myself had the task of heading back down the hill because we were due to pick up Earlene and Damien from the airport back at Asturias. We made it down and headed for Asturias. During the trip, due to lack of sleep and doing a bounce trip the previous night, Steve needed a few power nap stops (better than putting the hire car over a hedge!). We also got a call from Earlene saying that Damien missed the first flight from Belfast, whoops!

We collected Earlene and then headed back to the mountains, stopping off for a rather bad Burger King meal en-route, which saw the light of day again during the hike back up the mountains!

After a day of rest, we took a hike down the opposite side of the mountain and to the resurgence from the cave to place some charcoal detectors in the river. The Oxford group had been conducting some dye tracing and needed the charcoal detectors to be placed so results of whether the dye came through or not could be recorded. With it being a fresh mountain river it wasn't the warmest so going for a swim and jumping off the bridge definitely woke me up!

After another few days rest, myself and Damien (who made it over, albeit a day late!) made the trek towards the cave again. This time we were to get to the bottom and spend a few nights at the underground camp, which was easily going to be the longest I've ever spent underground and help out in whatever way we could with the expedition.

With this being my second time in the cave, I was more familiar with the route and also aware that I didn't need so

much layers! So we made our way down through the cave which really does open up at sections. We made it down to the underground camp in around 7 and half hours to be greeted by the team already down there, which included Aileen. We got some nice warm food handed straight to us and also Dmitry (one of the Russian guys) brought beer would truly tasted so good! After dinner we settle down for the night in a little tent. The tent was located on a high sandy passage which actually made for a very comfortable sleep, more so than the tent back on the surface.

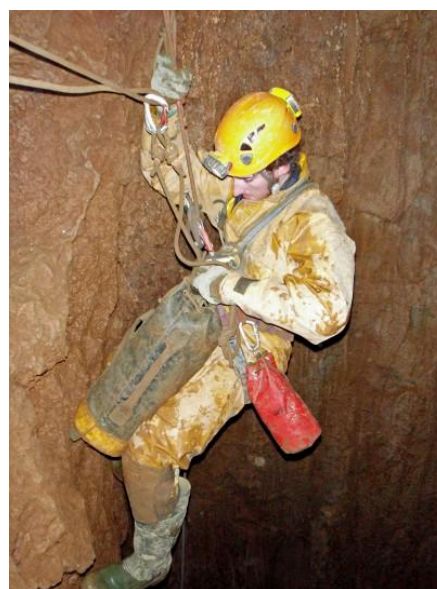


Figure 15: Conál McCartan on the pitch

On our first proper day underground we went with Hilary, the expedition leader to the bottom sump, which Tony Seddon pushed the previous few days. The lower section of the cave only involved a few small pitches (when compared to the rest of the cave!) to get there and a nice little boat ride across a pool roughly 30metre long. At the sump you could peer into the blue waters a look at the diving line disappeared into the dark! Once we had a look around, we carried used oxygen bottles back to the camp. Again that night we had a quality dinner and settled down for the night! I have to say the dinners in the cave were definitely quality even if it was instant noodles, pasta & instant mash with cheese, but they were good!

So on our second day underground, Aileen & Rob headed back to the surface, Hilary and Tony went to push an upstream sump and myself and Damien were giving the lovely task of pushing the 'piss shaft'! (This was in an area convenient to the campsite and would also be washed clean in the spring floods - Ed) We got geared up and went towards the lovely shaft with the truly unique smell of urine floating towards us. Damien went ahead as he was to rig it. The rock in the shaft was very 'flakey' and Damien was not confident that he could rig from anything which would hold. So we ditched the idea of rigging and did some free climbing down as far as we could. Unfortunately there was still some pools of 'liquid' on the ledges and the further we went down the stronger and more pungent the smell got until we were at the verge of being sick. So after doing this and looking at the shaft we thought it looked like it didn't lead anywhere so we made our way back to the camp. We got the dinner on the go for the diving team who would definitely need a warm dinner on their return.

After eating our final dinner underground we bedded down for the night.

Next morning we had a top notch breakfast with loads of carbohydrates to get us stocked up for the trip back to the surface! Again we made it out in about 8 hours! The trip out was actually pretty enjoyable as I was pretty comfortable and in a smooth rhythm so it seemed to pass pretty quickly. I also had a few songs stuck in my head for the trip out which was funny and I just began singing spontaneously half way up pitches!

When we reached the surface it was one of the most beautiful views I ever seen. It was just starting to approach dusk, the sun slowly moving down. The mouth of the cave sits on the side of a high v-shaped valley, below you the mountain suddenly goes to a vertical drop into another valley where the river flows through (where we placed the charcoal detectors). Also because of the fact that I hadn't seen natural light in three days made it all the more spectacular. It's something I'll never forget!

Steve went underground the following day with Madphil, Simon and Noel. I took the opportunity over the next few days to do some hiking and climbed some of the surrounding peaks, again getting to see some amazing views.

On Steve's return from the cave three days later, we were informed that Hilary had found a bypass to the upstream sump and guess what... piss shaft lead directly into that bypass! So if we had of climbed further down or been able to get a suitable rig set up, Damien and I could have discovered new cave passage!

The day after Steve returned from the cave we packed up our stuff and headed down the hill for the last time. We reached the hire car and over two trips made our way into Oviedo for our last night in

Spain, which enabled us to get proper food and also sample some of the local still Cider, which was pretty tasty!

Overall the trip was a massive success, definitely memories that will stay with me!

8.3. Diving Trip – Aileen Connor

Participants: Aileen Connor; Rob Garrett; Hilary Greaves; Tony Seddon

Joined by: Dmirty Parshin , Conal McCartan and Damien Datry (12 July 2009)

This trip had a threefold purpose: Firstly, and most importantly, to dive the lower downstream sump at -982m to ascertain if a connection could be found. Secondly, to investigate some high-level dry leads, namely the waterfall at the upstream section of the downstream sump, and the visible hollow above the head of Knife Pitch. Thirdly, to porter dive gear and campsite provisions into the cave.

We entered the cave circa 2pm on Thursday 13th July, having spent the morning packing the dive bottle and foodstuffs for the trip. We reached the campsite at -700m about 7pm, unpacked gear, made radio contact with Ario camp and cooked food for the evening.

Friday 11 July 2008

We started the days caving by portering the dive gear to the downstream sump. Tony prepared himself and his gear for the dive, with assistance from Hilary. Rob and I prepared a hotpoint for him post-dive. Upon completing this, Rob and I headed upstream look at the potential lead at the waterfall upstream of the sump. We concluded that it wouldn't be feasible to explore on this trip, as it would be too wet to hand-bolt up. The drill wasn't available, as the batteries had been taken out of the cave a few days earlier to be recharged. We returned to the lower downstream sump to discover that Tony had exited the sump. He had dived 43m and laid 81m of dive line before turning round because the air mixture in his tanks wasn't suited to deep diving. He changed from his diving gear and warmed up in the hotpoint, while the rest of the group repacked the gear which was returning to camp.

Saturday 12 July 2008

Tony and Hilary returned to the lower downstream sump, as Tony wished to confirm he had not missed any leads on his previous dive. Rob and I proceeded to the head of Knife Pitch, with the intention of hand-bolting up to investigate the visible hollow. Rob bolted up the pitch, while I belayed him. Unfortunately, on closer examination the hollow turned out to be a solution pocket. Rob then headed downstream to help Hilary and Tony carry gear back from the lower downstream sump. I headed back to camp with the bolting gear to keep the 6pm radio contact with Ario camp. No contact was made at 6pm, but the 7pm radio call proved successful.

Dmitry entered the campsite about 6.30pm, and proceeded to fix the stove that had broken the night before, with just a pen knife, or so it seemed. He then produced a dry bag and a presented everyone with a can of beer that he had bought from the Refugio that afternoon. When the second stove broke a few minutes later, he whisked it away to be fixed, a process which differed slightly from the first in that it seemed to involve a lot of open flame as well as the pen knife. Conal and

Damien arrived at the campsite about 9pm. The tent was rather cosy on Saturday night, although it wasn't tested to capacity, as Damien decided to sleep outside.

Sunday 13 July 2008

Dmitry, Rob and I headed out of the cave. Dmitry left about 10am, while Rob and I left about 11am. Tony headed to the upper streamway upstream sump with his gear to prepare to dive. Hilary, Conal and Damien headed to the lower downstream sump to collect all remaining dive gear, and return with it to camp. After this, Hilary intended to join Tony for the dive, while Conal and Damien planned to look at the undescended pitch near the camp. Rob and I exited the cave about 2pm, to the bizarre sight of several dozen goats eyeballing them from the top of the first pitch.

8.4. Camping Trip – Stephen McCullagh

After the previous bounce trip I had decided that this time that I would like to camp in the cave. It was obviously the only feasible solution to caving in the far depths of La Texa. I had never camped underground before but the other cavers who were with me were experienced at it so I had no uneasiness with being underground for two nights. The word coming up from underground camp via the Nicola phone had suggested that there were still no leads for dry cavers and that any discovery would probably only be made by divers. This was disappointing news I still hadn't recovered from the expedition to the 'Dachstein' in Austria in 2007 where I had spent the two weeks pushing a deep cave in Austria only to find all leads being 'Ghar Parau-ed'. I didn't think the options on the surface were a lot better and I felt it would be a waste of an expedition if I didn't have one proper attempt at finding new cave passage. On this trip I was going to be accompanied with 'Mad' Phil Rowsell, Simon Cornhill and Noel Snape. We were to join Tony Seddon who was already on his 5th day underground he was the main diver on the expedition and we were to help him with his diving gear and if we had the time MadPhil was going to push an aven at the end of the cave.

The journey over to the cave was uneventful; I had become used to hiking with heavy loads and with a day of rest behind us we were over there in double quick speed. As I was now familiar with the pitches and had reacquainted myself with the art of carrying bags strung beneath me, the pitches were easy and the descent to the bottom was quick. Towards the bottom, Noel started to slow down so the decision was made for MadPhil to 'bomb' on down and put on the tea. We arrived 20 minutes after him and after a quick decanting of camping gear and munching of food we set off to the far reaches of the cave.

Where previously the cave had been pitch after pitch, the character of the cave changed to a large 8 meter diameter down-dipping phreatic tube. After a few pitches and a couple of deep pools we reached the base of a large aven; this was Madphil's objective, Noel and I were to continue on and investigate if there were any leads missed further down.

The way on led down through a tight rift and into a small tube with a strong draft. Following this draft we forced a route through into a huge passage with the sound of a large river coming from the bottom of the slope. Following the water downstream the passage quickly sumped; Tony had dived this sump two days earlier and found that it quickly dropped to -40m this was a lead he wasn't prepared for because so he gave up to look for better leads. Upstream the passage continued for

200 m until a large waterfall was reached. The water seemed to issue from a large passage. Noel and I split up with the intention to systematically check all obvious and not so obvious leads. After two hours and with no significant leads we called it a day and made our way back up to join MadPhil and Simon. By this stage MadPhil had bolted up to a height of 25 meters and from this perch he was encouraged with what he saw (Figure 16). We figured there was no point heading back to camp just yet so we waited around in the cold. Half an hour later we got an excited call from Madphil. The lead was beginning to go off-vertical and it looked very promising. He called us up.



Figure 16: MadPhil Bolting up the Aven - Photo: Simon Cornhill

As I prussicked up I took time to admire the aven and I noticed something very interesting. All the way down the phreatic tube that had brought us to the bottom of the aven I had followed the scallops on the wall. On each scallop the shallow end of the pocket were always pointing in the direction that we were travelling. From my rudimentary knowledge of geology I knew that this indicated that when the passage was being formed the water had flowed in this direction. The shallow end of the scallops were now pointing up the pitch. This hinted that the aven was the main way on. I prussicked up to where MadPhil and Simon were and waited for Noel to arrive. As Noel was the new boy he was given the chance to push up into the unknown. The slope ahead was reasonably steep and covered in moonmilk but he made short work of it. To whoops of encouragement we all made it to the top.

At the top the passage went forward 20 m and then dropped down into what looked like a massive empty gour pool. We had no rope left but we resourcefully pulled the rope we had just ascended and threw it down onto the mud covered floor at the bottom. Simon went down first followed by

the rest of us. A quick scout around indicated that there was no easy way on; our choices were either a difficult looking climb or a tight-ish muddy squeeze. The tight squeeze was tackled first and we broke into another chamber which was similar in size to the first. Again there was no easy way on. Things weren't looking as promising as we first thought. It was now getting late and it was decided that we should head back to camp and leave the surveying for the next day.



Figure 17: Stephen and Noel at the campsite - Photo: MadPhil Rowsell

The journey back was tiring but it was good to know that our campsite wasn't too far away (Figure 17). When we got back Tony had arrived back from his diving exploits with good news. Earlier that day Tony helped by Hilary had pushed through the sump to find going stream-passage. The best bit for us air breathing cavers was that on the return journey he spotted a sump by-pass. Plans were made for the next day. Simon and Noel were to join Tony

investigating the wet passage beyond, MadPhil and I were to go back and investigate the climbs above the two chambers at the top of the aven that were found that day. The going stream-passage sounded the best option to me but surveying the aven and then climbing the unpromising climbs needed to be done.

After an uninterrupted sleep, my first proper camping trip underground, we woke and got food ready for our trip. The journey back to the aven was uneventful. Our first challenge was to rerig the aven and then to survey from the bottom and into the two new chambers. The surveying was difficult and it was a while before we got to the limit of the previous days exploration. MadPhil decided to attempt the first climb in the gour pool chamber; it was an awkward climb but after placing a couple of drilled bolts and a dodgy looking rebelay he got to the top. I climbed up as quickly as I could to join him. Unfortunately another climb was required; this one was a vertical chamber on slippery moonmilk, unfortunately bolting was not an option. MadPhil gave it a go and after a bit of chimneying and a leap of faith he popped out at the top. I again quickly followed him. The chamber he was in was pretty it had a large flowstone pillar dominating the upper part and what looked like a passage heading off at the bottom. I made a beeline for the passage however it turned out to be a shadow. All the leads were pushed but to no avail. It was time to survey and move on. During the surveying process we found a small perfectly formed pure white Selenite bush. I had never seen one before so I was quite impressed. Unfortunately I had broken my camera on a hiking trip three days previously so there was no photography. The surveying was straight forward and we eventually made it back down to the gour chamber. A quick look at the time and it became apparent that the climbing and surveying took a lot longer than we thought; it was now after 7 pm. MadPhil and I discussed what we should do next. We figured that there was one rubbish lead left and we may as well finish it off so that no-one had to come back. It had been a disappointing trip but that's caving.

The rubbish looking climb was in the secondary chamber through the tightish muddy squeeze. MadPhil took the lead again and he quickly made it up the first part of a loose slope; it opened up. Climbing further he found a good anchor point for the rope and I joined him. Behind him the climb leveled off and we could see a large passage heading off. As we got to our feet we spotted a number of selenite bushes similar to the one spotted at the top of the previous climb. A couple of steps more and the passage opened up before us. More surprisingly the walls and floor of the passage appeared to be covered in 2 foot high, bonsai tree shaped, ghostly white crystal bushes (Figure 18).



Figure 18: MadPhil viewing the Selenite bushes - Photo: Simon Cornhill

They were everywhere; even on parts of the wall that seemed to be devoid of them there was a fine covering of translucent three- inch long needle crystals (Figure 19).



Figure 19: The Selenite Needles - Photo: Simon Cornhill

MadPhil graciously suggested I should lead on. The passage ahead was about 6 foot wide and 30 feet high. Even at this size, I found it difficult to traverse; every footstep and hand placement required precise movement to prevent the destruction of the stunning fragile crystals.

Half an hour of difficult caving and still the selenite crystals amazed us. Eventually we met a natural end to our exploration; ahead was a 12 m deep pitch. The decision was made to survey the passage from this point backwards. I was on the instruments and MadPhil recorded and drew the passageway. With all the formations this was a difficult proposition, however we efficiently worked our way back through the passage and to our relief we made it back to the start of the climb up. On the way back I noted that the shallow end of the scallops pointed towards the 12 m pitch. This appears to be the main continuation of the large phreatic tube below. With one last look at the formations we proceeded back to the campsite.

Arriving back at the camp I could barely contain myself, however we listened first to the discoveries made by the second group. In total they had gained a few tens of meters of wet stream-passage leading on through a couple of deep pools and ending in a wet pitch. I was in the fortunate group.

After describing our finds we got some food and went to bed; my second night in the cave (Figure 20).



Figure 20: Stephen a bit excited, Noel looking on and Tony Seddon fixing his helmet - Photo: Simon Cornhill

The next morning I woke up at 9 and prepared my gear for the long exit out. After a pasta breakfast I gathered a couple of used drill batteries and proceeded out. Tony was also leaving but he suggested that I speed on. The journey out didn't take as long I expected and towards the top I met a group of cavers coming in. They had only joined the expedition and were on their first trip in. I quickly passed them and made it to the surface with enough energy to carry all my gear back to top camp. This was my caving over for the 2008 expedition.

9. Medical Report – Dr Earlene Armstrong

I have been caving for several years however this was to be my first expedition abroad. I was planning to travel with four other members from the Irish group and as a qualified doctor was invited to act as medical officer. The majority of the members on this expedition had significant cave rescue experience and first aid training. My role was to add some medical back up.

With the anticipated three hour hike from camp to civilisation, preparation seemed essential. Correspondence with the Oxford Caving Club medical officer prior to departure ensured adequate medical kits were organised prior to the trip. Dave Legg's (Oxford Caving Club) experience as a medical officer on previous expeditions proved invaluable. He organised the medical kits prior to departure with input from myself and key members of the group. The contents were bought via Wilderness Medical Training and the Nomad Pharmacy group. A GMC registered doctor was required to sign for medications.

During the expedition, the scenarios most likely to occur included dehydration, minor cuts, strains and sprains. Planning of the first aid kits also had to take into account the possibility of falls, fractures and hypothermia occurring up to 900m underground. Five medical kits were devised. Full details are attached. The main surface kit included rehydration powder, analgesia, antiemetics, anti-diarrhoeals, antibiotics, and equipment for basic first aid. The underground kit and rescue kit had similar contents plus suturing equipment. Seperate intravenous kits for fluids and drugs were available for surface use and rescue for those appropriately trained.

No major incidents occurred during the expedition. Several members suffered from dehydration and stomach ache, mainly while acclimatising to conditions. Oral rehydration solution and analgesia was sufficient. More people suffered from sprained ankles at various stages, treated with simple analgesia and support. One individual suffered from diarrhoea while underground, treated with loperamide.

Overall the expedition was successful both from a medical and caving perspective. As expected preparation was key and the experience gained from this expedition will allow improved preparation for the next.

Ario First Aid Kit**Antimicrobials:**

3 x 4g tubes chloramphenicol ointment

20 x Ciprofloxacin 250mg

32 x Clarithromycin 250mg

42 x Co-amoxiclav 375mg

Painkillers, Local Anaesthetics and Sedatives:

20 x tramadol, 50mg (Zydol)

40 x co-codamol (30/500)

100 x paracetamol (500mg)

20 x aspirin (300mg)

100 x ibuprofen (400mg)

Other Medication:

32 x prochlorperazine, 5mg (Stemetil)

1 pack Strepsils

1 pack antacid tablets

10 x laxative sachets (Movicol)

25 x rehydration solution (rehydrat/dioralyte)

48 x loperamide (4mg)

30 x chlorphenamine, 4mg (Piriton)

1 x Salbutamol inhaler

Cream and Ointments:

1 tube Anusol cream

50g tube Aqueous cream

2 tubes Bactroban cream

10ml Betnesol-N ear drops

1 tub vaseline

1 tub athletes foot powder

1 x bottle of Optrex eye-wash

Dressings:

2 x wound dressing, no. 14 medium

2 x wound dressing, no. 15 large

2 x non-adherent dressings, 5cmx5cm

2 x non-adherent dressing, 10cmx10cm

2 x melolin dressings, 10cmx10cm

3 x 5 pack of gauze swabs, 5cmx5cm

50 plasters, assorted

2 x plaster strips

4 x packets of Steri-strips

2 x roll of zinc oxide tape

2 x roll of micropore tape

20 x sterile wipes

2 x crepe bandages, 7.5cm

1 x cohesive support bandage

2 x triangular bandage

1 x eye dressing no. 16

3 x 5 packs of Compeed blisters dressings

15 x antiseptic solution sachets

15 x sterile saline sachets

Misc:

5 pairs latex gloves

5 pairs sterile gloves, medium

1 x tweezers

1 x Tuff Cut scissors

2 x disposable scalpels
1 x digital thermometer
1 x otoscope
1 x dental first aid kit
1 pack cotton wool
1 pack tampons
5 x condoms
1 x pencil
1 x waterproof notepad
1 x marked 250ml mug (for rehydration solution)
1 x copy of the Rescue Guide
2 x packs of duct tape
1 x roll of athletics tape

Ario Injections Kit

* ONLY FOR USE BY A TRAINED EXPEDITION MEMBER

* Purpose: To remain at Ario, for use on any patient requiring treatment by injection.

6 pairs of latex gloves
5 pairs of sterile examination gloves
1 x guedel airway size 2 (1: 2009 – 04)
2 x bic razors
1 x yellow waste sack
1 x notebook
1 x pencil
1 x 5 pack of 7.5cmx7.5cm swabs
1 x 5 pack of 5cmx5cm swabs
20 x sterets pre-injection swab
10 x 21g green needles (2: no date)

10 x 25g orange needles (2: no date)
10 x 18g green cannula (3: 2011 – 08)
10 x 22g blue cannula (3: 2011 – 03)
10 x 2ml syringe
10 x 5ml syringe
10 x 5ml ampoules of sodium chloride 0.9% for I.V.
10 x 2ml ampoules of Zydol (tramadol hydrochloride) 100mg ampoules
10 x 1ml ampoules of adrenaline (epinephrine) injection BP 1 in 1000
10 x 1ml ampoules of chlorphenamine injection, 10mg
10 x 1ml ampoules of Stemetil (12.5mg of prochlorperazine mesylate)
10 x 1ml ampoules of lidocaine hydrochloride injection 1% ampoules
10 x 2ml ampoules of hydrocortisone (100mg hydrocortisone)
1 x 1g ampoule Rocephine powder (ceftriaxone, 2008 – 10) to be reconstituted with:
1 x 10ml ampoule of water for injections (out of date)
2 x 500ml sodium chloride 0.9% I.V. infusion B.P.
2 x 500ml glucose I.V. solution

Underground First Aid Kit

* Purpose: to stay at an underground location (probably camp) in case of accidents

Sam splints: 2

Wound dressings, large: 4

Wound dressings, medium: 4

Melolin dressing, 10x10cm: 2

Non-adherent dressing, 10x10 cm: 3

Non-adherent dressing, 5x5 cm: 3

5 pack gauze swabs, 5x5cm: 2

Plasters: 10, assorted

Plaster strip: 2

Zinc oxide tape: 1 roll

Micropore adhesive tape: 1 roll

Sterile wipes: 10

Crepe bandage: 3

Triangular bandage: 2

Minim Tetracaine (amethocaine hydrochloride 1%) eye drop: 2

Fluorets sterile ophthalmic strips: 5

Eye dressings: 2

Steri-strips packs: 3

Antiseptic solution (Tisept): 3

Purified water (Normasol): 3

Bactroban cream: 1

Burn bag: 1

Betadine paint (or iodine): 1

Adjustable neck brace (stored separately)

Latex gloves, non-sterile: 3 pairs

Latex gloves, sterile: 3 pairs

Note pad & pencils

Gaffer tape: 2 small rolls

Tough cut shears

Safety pins: 6

Antiseptic hand wash: 1 tub

Dental repair kit

Suturing kit: 1 set tools, 2 needles & thread -- **trained people only**

Tramadol 50mg: 12 tablets

Paracetamol 500mg: 20 tablets

Aspirin 30mg: 5 tablets

Ibuprofen 400mg: 20 tablets

Loperamide: 10 tablets

Stemetil: 10 tablets

Piriton (chlorphenamine 2mg): 20 tablets

Rehydration powder sachets: 5

Antibiotics, Clarithromycin: 12 tablets

Antibiotics, Ciprofloxacin: 12 tablets

Epinephrine pen: 1

Rescue kit

* Purpose: to stay at Ario, ready for surface or underground incidents

Sam splints: 2

Wound dressings, large: 4

Wound dressings, medium: 4

Melolin dressing, 10x10cm: 2

Non-adherent dressing, 10x10 cm: 3

Non-adherent dressing, 5x5 cm: 3

5 pack gauze swabs, 5x5cm: 2

Plasters: 20, assorted

Plaster strip: 1

Zinc oxide tape: 1 roll

Micropore adhesive tape: 1 roll

Sterile wipes: 10

Crepe bandage: 3

Triangular bandage: 2

Minim Tetracaine (amethocaine hydrochloride 1%) eye drop: 2

Fluorets sterile ophthalmic strips: 5

Eye dressings: 2

Steri-strips packs: 3

Antiseptic solution (Tisept): 3

Purified water (Normasol): 3

Bactroban cream: 1

Betadine paint (or iodine): 1

Adjustable neck brace (stored separately)

Latex gloves, non-sterile: 3 pairs

Latex gloves, sterile: 3 pairs

Note pad & pencils

Gaffer tape: 2 small rolls

Tough cut shears

Safety pins: 6

Antiseptic hand wash: 1 tub

Dental repair kit

Suturing kit: 1 set tools, 2 needles & thread -- **trained people only**

Tramadol 50mg: 12 tablets

Paracetamol 500mg: 20 tablets

Aspirin 30mg: 5 tablets

Ibuprofen 400mg: 20 tablets

Loperamide: 10 tablets

Stemetil: 10 tablets

Piriton (chlorphenamine 2mg): 20 tablets

Rehydration powder sachets: 6

Antibiotics, Clarithromycin: 12 tablets

Antibiotics, Ciprofloxacin: 12 tablets

Epinephrine pen: 1

Rescue Injections Kit

* ONLY FOR USE BY A TRAINED EXPEDITION MEMBER

* Purpose: additional first aid kit, to be taken with the rescue kit if a trained expedition member will be available to administer treatment by injection.

5 x 5ml syringe (2: 2008 – 11)

5 x 2ml syringe (1 x 2009 – 01)

10 x 21g green needles (8: no date)

10 x 23g blue needles (6: 2010 – 12)

10 x 25g orange needles (3: no date)

2 x blue cannula (1: 2011 – 03)

2 x green cannula (1: 2011 – 08)

2 x grey cannula (2: 2010 – 10)

2 x orange cannula (2: 2009 – 10)

1 x 500ml sodium chloride I.V.

5 x 5ml ampoules of sodium chloride 0.9% for I.V.

5 x 2ml ampoules of Zydol 100mg ampoules (100mg tramadol hydrochloride in 2ml colourless aqueous solution)

5 x 1ml ampoules of adrenaline (epinephrine) injection BP 1 in 1000

5 x 1ml ampoules 10mg chlorphenamine maleate Ph. Eur.

5 x 1ml ampoules of Stemetil (12.5mg of prochlorperazine mesylate)

5 x 1ml ampoules of lidocaine hydrochloride injection 1% ampoules (10mg of lidocaine hydrochloride in each 1ml of colourless sterile solution)

5 x 2ml ampoules of hydrocortisone (100mg hydrocortisone)

10 x pre-injection swabs (5: no date)

2 x 5 pack of 5cmx5cm swabs

1 x roll of micropore tape

5 pairs sterile gloves

1 stethoscope

1 blood pressure gauge

1 thermometer

2 pencils

1 waterproof notebook

10. Expedition Travel Arrangements

The Parque Nacional Picos de Europa lies just to the southeast of the small town of Cangas de Onís, between Oviedo and Santander, in the north of Spain. The Parque consists of three massifs: the Picos de Cornión (Western Massif), the Central Massif, and the Eastern Massif. The La Texa 2008 expedition visited the Picos de Cornión (Upper left of the two green regions shown on Figure 21).

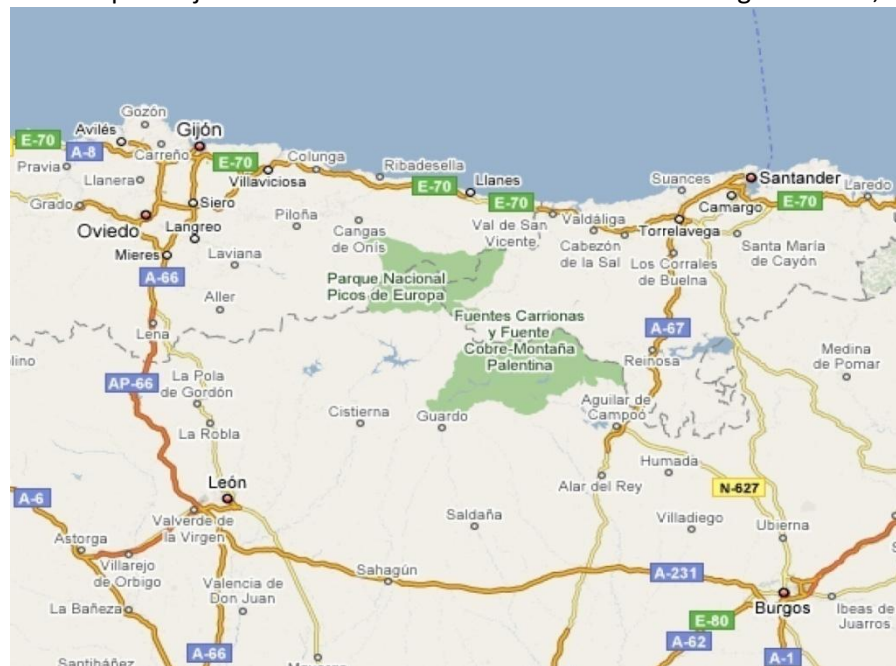


Figure 21: Asturias, showing location of the Picos de Europa

There are several travel options available for those planning an expedition to the area. For those traveling with the bulk of the expedition gear, ferry transport is the most advisable. From Ireland this requires getting a ferry from Rosslare or Cork to Roscoff or Cherbourg and driving through France and into Spain. For this expedition, we combined with OUCC and expedition members from England transported both sets of expedition gear from Dover to Calais by ferry, then drove down across France to Spain.

For those traveling with just their own caving gear, flying is the cheaper option. From Ireland this requires either two flights into one of the northern airport (Santander or Oviedo/ Asturias) or one direct flight to Madrid from Dublin, and then a long drive north. It is possible to get to the nearest major town, Cangas de Onís, by public transport from all three airports, and an infrequent connection bus runs from Cangas de Onís to Los Lagos. However, in all, several changes are required, and the scheduling often proves too tight to successfully make the connections in one day.

Personally, we flew Easyjet from Belfast to London Stansted and then on to Oviedo/ Asturias airport. We hired a car and traveled from the airport via the E70 (A8), which connects to the A66 (Oviedo), then took the A64 (La Panerona), which connects to the N624 (Arriondas) and then the N625 (Cangas de Onís). From there we followed road signs for Covadonga, and then for Los Ecrina, where we parked the car.

The expedition camp was located in the Jou de Ario. This is accessed via a walk of approximately three hours up a well-marked trail (yellow paint markers) from Los Ecrina (see map 2 below). The trail is



Figure 22: Los Ecrina

characterised by the four ‘Sods’, the most arduous parts of the walk. Figure 22 shows the view of Los Ecrina from the top of Sod One.



Figure 23: Sod Two

Figure 23 shows Sod Two, the top of which is roughly half-way to Jou de Ario. The picture below shows the rewarding view waiting from the top of Sod Four (Figure 24), a short distance from Jou de Ario.



Figure 24: View at the Top of Sod 4

11. Expedition Expenditure

This expenditure is strictly related to costs incurred during the expedition. Other costs include gear for camping and especially purchased expedition caving gear.

Item	Cost per person
Belfast to Stansted	£75.49
Stansted to Asturias	£104.53
Pre-Expedition Gear Fund	£80.00
Food (£5 per day)	£70.00
Car Hire	£78.57
First Aid Costs	£10.00
Total	£418.59

Notes:

Flights were booked two months in advance with Easyjet to keep the costs down.

The hire car was a bit of a luxury but it was useful to get people to and from the airport. It also reduced the time of transporting people and gear to and from the Lake Enol car park.

The pre-expedition gear fund purchased rope and other gear for rigging the cave.

The food rate was standard and included chocolate for underground.

The first Aid gear was personal kit and each member was allowed to keep it at the end of the trip.