

At the gates of Postojna Cave, Slovenia. L to R: Steve Bourne, Neil Kell, Andy Spate, Kent Henderson, and Postojna Caves Manager, Bogdan Debevc.



THE CAVES OF EASTERN EUROPE

- Steve Bourne, Andy Spate & Kent Henderson

Andy in the train into Postojna Cave



After months of planning, three intrepid cave nuts from Australia, Steve Bourne, Andy Spate and Kent Henderson met on Monday 12 September at Ljubljana, the capital of Slovenia - the capital of karst and caves. So began a two week adventure to explore the caves and karst of Eastern Europe.

Slovenia

First stop was of course Postojna, a mere 45 minutes from the airport. Brief introductions at the ticket office were made and Caves Manager Bogdan Debevc came to meet us. This man is a legend. Very quickly a trip was arranged into the

Postojna (show) Cave (Postojnska Jama) and he promised to meet us next morning to assist us with planning our stay in Slovenia.

The train ride into Postojna cave is famous and with features everywhere, but until you have done the trip it is difficult to imagine the experience. It was way too fast to see the cave properly. The walls are very close and it seemed to run downhill both in and out of the cave. Interestingly, when we hopped on the train some days later for a second tour, the train ride seemed much slower - the perception of speed must have been the initial excitement. Tour groups are divided by language in Postojna - English, French, German, Italian and Slovene. This was the only cave we saw with this strategy but it is probably the only one that attracts such large groups of visitors to warrant it.



At Predjama Castle and Cave



Our English speaking group the first day was just 26, and the interpretation and enthusiasm of our guide was excellent. Compared to Australian show caves, it was huge! Tour groups walk through about 1.7 km of cave with the guide providing snippets of information along the way. Lighting is bright to display the immensity of the cave and we observed what was to be a common problem throughout many caves - *lampenflora*. Very high visitation translates to lights being on virtually all day. This has allowed vast areas of *lampenflora* to grow, but Bogdan assured us later that they have annual control days. The train ride is about 3.5 km in total and while the caving purist might scoff at the idea of a train through a cave, it is definitely the only way to move 500,000 plus visitors who visit the cave each year. While this number is huge, it is a far cry from the 900,000 peak before the conflict in the region in the 1990's. Imagine 87 coaches in the car park at one time??!!

Neil Kell was in Bosnia-Herzegovina working on a lighting plan for Vjetrenica Cave and linked up with us on our first night in Slovenia. His visit will hopefully prove quite fruitful for him, but more of that later.

The next morning Bogdan and his offsider Peter Stefin met with us and discussed our plans. All was set for our Slovenia stay. Our next visit was to Predjama – the ‘castle in a cave’, quite a mind-blowing site. The castle is normally self-guided, however Bogdan and Peter had arranged for a guide to take us through. It was one of the best interpretive experiences any of us had been fortunate enough to have.



Tourists lined up to enter Postojna Cave

The story of Erasmus, the robber prince, who met his death by cannon fire “while doing what even the Turkish emperor could not do by special emissary”, was a favourite that will live with us for some time. In other words, he was ‘sitting on the throne’ at the time! The castle has a long and rich history that is celebrated each year with special events such as jousting competitions and historical re-enactments – we don’t know if Erasmus’ demise is adequately re-created! It is certainly worth a visit.

The cave under the castle was visited by handheld torches. The front section of the cave originally served as the stables for horses and before that it was used by Neolithic people. This, we were to learn, was not exceptional but almost the norm for many of the caves we visited. Once again, it was a well-guided tour with many features in the cave, although with much less speleothem development than Postojna.



Basins in Scojanska Jama

The afternoon saw a trip to Scojanska Jama, a World Heritage site. Once again, the locals met us with open arms and Tomaž Zorman (effectively the local karst science officer) took us to visit the cave on the back end of a tourism party. This was a real highlight and is difficult to describe. The cave is HUGE; a large river (The River of Seven Names – more on this in the next Journal) runs through it, with large areas of great decoration, early occupation sites and cave bear fossils. One beautiful feature of Scojanska Jama is its relative underdevelopment, the paths are formed but it does not possess mountains of concrete. The hand rails old, but adequate. The main bridge in the cave is new, but as it is 45 metres above the water, a solid structure is definitely warranted. Visitation is surprisingly low when compared to Postojna less than one hour away – a mere 70,000 per year.

After the visit to Scojanska Jama, much to the disgust of Kent, Steve took a right turn out of Scojancan Park to Lipica, the home of world-famous Lipizzaner horses since 1580, for a quick visit to obtain special souvenir for home. (A ‘horsy’ jacket for his beloved Dr. Liz Reed back in Naracoorte – Kent!)

The next day saw a trip with Bogdan that included a visit to Pallina Cave, normally guided by the locals speleological group. This has the Pivka River flowing through it downstream from its passage

through Postojna. Here the river is larger but the cave much less decorated. Afterwards, we visited some great surface features, including two natural limestone bridges and the Cerkina Polje – large and annually disappearing and reappearing lake.

Later, back at Postojna, Andy, Neil and Steve took a walk through the Biospeleological Museum while Kent retired to his room unwell ('Delhi Belly' in Slovenia!). This great living museum was in a cave! A small section of Postojna Cave has been cut into to provide access to a small chamber. The section is awesome, slicing through several layers of flowstone and fluvial sediments that have enabled researchers to build a chronology of cave filling and speleothem deposition. Surprisingly, the surface speleothems are less than 15,000 years old. The cave has the original aquariums in place and house a variety of cave inhabitants, the most famous being *Proteus anguinus*, the human fish. *Proteus* is everywhere at Postojna; numerous in the cave streams, on T-shirts, painted on the car park to guide people to the cave entrance - in addition to a plethora of dubious souvenirs.



Ice Formations in Demanoska Ice Cave

The curator of the museum was working in the cave at the time and we discovered he had met Stefan Eberhard, Robyn McBeath and Tim Moulds at a biospeleological conference in India last year - small world!

In the evening we visited to Otuk Cave, another section of the Postojna Cave System, and this outing may prove quite beneficial for Neil Kell. Partway through the cave, Bogdan told us of the plan to provide electrical lighting in the cave and thus to reopen it as a show cave. An off the cuff comment, "that it sounds like a good job for Neil", resulted in an exchange of cards and much talk of how the cave could be lit. Although much smaller and less decorated than Postojna Cave, the rich colouring of speleothems and the atmosphere created by the stream would make it a valuable addition to the show cave experiences in the area and offer visitors a more personalised tour than the train ride in the main cave.

With Kent unwell, Andy and Steve took a drive through the Slovenian Alps through the Ursic Pass. In order to drive to the 1650 metre high point we needed to negotiate something like thirty hairpin bends, before a similar number on the downward leg. We felt sorry for a backpacker

struggling up the mountain and offered him a lift. Our new Polish friend told us he had spent the night sleeping in the leaf litter, which was really obvious from the strong odour on his clothes! We weren't sorry when we dropped him off at the next town so we could wind the windows up again. The Alps scenery was spectacular, if slightly obscured by cloud on the day we visited.



Andy Spate does a (wet!) crawl in Dobsinska Ice Cave

We had lunch at the beautiful city of Bled, gazing across an exquisite lake. The city surrounds the lake which constantly fed by a stream running out of the mountains. A church on the island in the middle of the lake could only be visited on a guided tour in a small boat powered by a fit man and a pair of oars.

The following day, with Kent recovered, we experienced a real highlight of the trip – a visit to Krizna Jama (Cross Cave is the English translation - pretty dull!). It is described as the best water cave in Slovenia. An embarrassing navigation error in near torrential rain while trying to find the cave led us to the Croatian border and consequently we were running late to meet our less than pleased guide Alozs (just call me Lewis) and his friends. Krizna Jama is offered to the public as an adventure tour with groups weighing in total up to 320 kg (including the guide) being taken in a rubber dingy upstream, across 13 lakes, to a spectacularly decorated chamber.



The 'tourist trap' in the Ballroom Hall inside Postojna Cave

A shield in Dominca Cave



The entrance chamber was full of cave bear rubbings with one of the cave bear skulls found in the cave on display. Caving in Slovenia would have been a dangerous pastime 15,000 years ago, even if these bears were herbivorous! Frost-damaged speleothems near the entrance and heavily scalloped walls from fast flowing water were also significant features. Andy opted out of the boat trip fearing he was afflicted with Kent's malady from two days previous (happily it turned out he was okay) and thereby solving our weight and numbers problem – thus our party consisted of Steve, Kent, Neil and Alozs.

Alozs was an excellent tour guide and exceptionally passionate about cave conservation. He gave us strict instruction on feet placement to minimise damage, accurate and interesting interpretation and he had an excellent knowledge of cave photography - making this a truly memorable caving experience. Very few cave guides have such a passion for the cave they guide as this. The photographs we managed to get from this cave are the best for the whole trip and will soon grace the walls of a certain Naracoorte office. This tour is highly recommended and should not be missed by anyone who travels to this part of the world.

We departed for Croatia and points north the next day, but Neil stayed in Slovenia to visit Skojanska Jama again to discuss lighting options with Tomaz. We may see several caves lit by Neil in this part of world in the near future!

Croatia

The famed Croatian coast was being blasted by a gale (known locally as the *bora*) as we headed south out of Slovenia. Andy estimated the winds at 150kph, based on his Antarctic experiences, and

far in excess of what either Kent or Steve had experienced. The drive inland across Croatia was rather sobering. We noted innumerable houses not rebuilt after the conflict in the 1990s, with many bullet holes evident across many of the fronts of houses still occupied. Our visit to Velebit National Park to see its alpine karst scenery was somewhat blighted by zero visibility. We had intended to visit Plitvice Lakes, a World Heritage site famous for its karst lakes and wonderful landscapes. Unfortunately the rain had set in and made it impossible to see anything, so we bought the book and left! The entry price to the park was high, at 80 Kuna (about \$20), given that the glossy, comprehensive souvenir book was only 75 Kuna. All was not lost when we discovered a small tourist cave was open a short distance away.

Barac's Cave is at the end of a relatively long winding road, but fortunately well sign posted. Tours are conducted by the local speleological group who opened the cave for tours just twelve months before our visit. After Kent had weaved his magic on the lovely guide, Drazenka, we were part of the visiting party walking up the hill through still heavy rain. She was in no hurry and we took what seemed a very long time to get to the cave entrance, looking at some very interesting, spectacularly black and yellow-coloured, salamanders along the way, and arriving at the cave entrance saturated.



Decoration in the Demanoska Cave of Liberty

The cave has no fixed lighting, although some is currently being installed. Light is provided by "ecotorches", a novel idea where a dichroic globe has been inserted into a bamboo holder and connected to a battery pack. It provided very good illumination, given it was fully charged and Kent spent most of the tour only inspecting things at close range that his dim (not properly re-charged) light could show! Unfortunately, the promotional material for this cave exceeds what is offered. Many of the spectacular shots are taken in parts of the cave not visited. The infrastructure has been done on a very limited budget. A timber bridge less than two years old was severely attacked by fungi and will not last long (funny about that...). No flash photography was allowed, but the many bats using the cave were subjected to hand held lights at close range. A little bit of sound advice and knowledge would greatly assist the enthusiastic caving club with developing this cave.

Near the entrance of the new
Baradla cave Visitor's Centre



Hungary

After the glorious mountainous scenery of Croatia and Slovenia, the agricultural plains of Hungary were too close to home for Steve. Our objective was the Aggtelek Karst World Heritage Area, which spans the Hungarian/Slovakian border. Our passports received quite a workout as we crossed the border several times over a few days to the non-amusement of border control officers. The Dominca (Slovakia)/Baradla (Hungary) Cave system is over 30 kilometres long with three sections open as show caves. The Hungarian side has a fantastic new development including visitor centre and new sections of show cave. This opened at the end of July just a few weeks before our visit. One Billion Forint (about \$Aus 6.5 M) was spent on the project and is an excellent example of the European Union in action.

The Baradla cave tour descends through an artificial tunnel with 270 steps into the natural cave and along 2.3 km of passageway. It is a long walk and not for the unfit, with the two hour tour duration. The development is high class, all stainless steel and plenty of it. Uprights are located very two metres with double rail virtually the whole way, enough to do several Australian caves! The tour runs one way and the lighting has been designed for this - a backward glance is rewarded with blinding light from 500 watt floodlights. It was interesting experiencing a tour in a different language (Hungarian) with written English translation. What it highlighted for us is how we can improve the service we offer visitors with little or no English in Australia, as a guide who cannot communicate with you at all is very frustrating and the translation was not of high quality.

The cave had two real highlights, a 23 metre stalagmite (much larger than the famous Khan in Kubla Khan Cave at Mole Creek and Cathedral Cave at Wellington) and an amazing light and sound show in a very large, extremely well decorated chamber. None of us are normally enthusiastic about this type of presentation, however this was very good.

In sharp contrast to the new, modern development was the other section of this cave open for visitors on the Hungarian side of the border, Aggtelek Cave. A specially arranged tour with an English speaking guide, Kristian, was greatly appreciated.

This cave has an incredible history of human occupation, dating back more than 7,000 years. The fires lit by the Neolithic people and later visitors to the cave heavily impacted its first chambers. While we may view this as damage, it provides an interesting insight into early occupation of the area and, with advancing dating techniques; it could possibly yield some interesting information on just how long the cave has been used. We were treated to a light and sound show that is part of the regular tour, and while not as spectacular as the Baradla Cave experience, was still quite memorable.

Slovakia

We met Dr. Pavel Bella and his colleague, Ing. Peter Gažík, at Dominca Cave, just north of the Hungarian border. Pavel and Peter both work for the Slovakian Karst Institute and we are extremely grateful for the time they gave up showing us around. Dominca Cave, as with many caves we visited in Slovakia, has a large visitor centre built in front of the cave entrance. Another obvious feature was the way in which World Heritage is proudly displayed at each listed site, including the framed inscription. New displays have been developed by Pavel and will be a valuable addition to educational visits to the site.



Steve, Pavel Bella and Andy
in the boat in Dominca Cave

Pavel was our guide for this cave, which has many outstanding features, the most obvious being cave shields. There are more shields in the Dominca/Baradla Cave system than all of Australian caves put together - over 600 in total! These logic-defying speleothems are everywhere with some quite large - over one metre across.

A short boat ride was expertly navigated by a regular guide, extending the tour by about 150 metres. The boat was propelled by a near-silent electric outboard - presumably like those used for fly-fishing on lakes. This idea might be considered for Waitomo, for example, so the guide and handlines does not get between the visitors and the green things.

The cave also has evidence of early human occupation, including clay pots and a firing kiln. One pot has even been covered with flowstone. Although we did not have a regular guide for this tour, it appears there is a greater emphasis on integrating science into the Slovakian cave tours, when compared to the cave tours we did in Hungary that were more fantasy-based.

The entrance – Planina Cave



Our next visit was to the Ochtynska Aragonite Cave. It was found during mining for magnesite and pyrite in the 1970s. It is spectacularly adorned with aragonite speleothems, with some areas protected by chicken wire. As the cave was found by mining and has been substantially altered, we thought sinking the paths a little more in places would be a better option than the chicken wire, and so reduce the need for protective infrastructure generally. As an additional security measure, visitors on guided tours are monitored from the manager's office via closed circuit cameras. The cave has a restricted visitor season and receives just 30,000 visitors each year. Careful management has, and will, ensure this cave remains in a excellent state of preservation.

We managed to visit two ice caves with Pavel, Dobsinska Ice Cave and Demanoska Ice Cave. Andy became the first person in history to visit an ice cave with a t-shirt on, having severely raised his core temperature on the very long walk up to Demanoska Ice Cave! This cave is a good lesson in maintaining the natural conditions, as years ago cavers excavated a passage between this section and a lower section of the cave. The change in conditions resulted in the ice beginning to melt and the passage being quickly closed again.



Steve Bourne at the hotel named in his honour (!)

Dobsinska Ice Cave has the largest volume of ice of any cave in the world, a solid block of 120,000m³ – maybe! Ice-skating was a popular pastime in the early days of this cave; such is the area of ice. The cave is obviously cold, although not unpleasantly so and it is probably off set by the warmth you generate just getting up the hill to the entrance, as Andy discovered. Cave climatic conditions are carefully monitored to ensure the high visitation

this cave receives does not result in melting the feature visitors come to see. Even though it is only open from 15 April to 30 September, over 115,000 people visit each year.

It was interesting to see timber platforms and rails that looked brand new, even though they had been in the cave for over thirty years – the cold presumably suppressing fungal growth – although some *lampenflora* could be seen. It just shows that the perfect material for caves may vary according to the cave's conditions, as steel rails would be unbearably cold. This we found later on our trip.

Our next visit was to Demanoska Cave of Liberty. WOW! This cave is unbelievable, with more and more calcite every time you turn a corner. It is one of the most heavily decorated caves we have seen and just of immense size, most Australian show caves could be placed within this one cave and hardly fill it! Over 175,000 people visit the cave each year, with the cave closed for two weeks. The reason for the closure is interesting. Despite the practice being discouraged, many visitors throw coins into pools in the cave and it takes two weeks each year to clean them all out. It does seem a good way to fund the staff Christmas party though!

Our stay in Slovakia in the sizable town of Liptovský Mikuláš was at the very comfortable and appropriately named 'Hotel Steve'. Even more appropriate was the lovely young lady in reception who insisted on bringing beers upstairs to Steve and Andy, saying "you cannot be thirsty-no good!"

An afternoon was spent at the Slovakian Karst Institute where Andy gave a talk on Australian caves and Peter (whose English was excellent) responded with a presentation on the structure and operation of the Institute. It has a nationwide staff of sixty-five which includes individual site managers, but not guiding staff (who are mostly casual).



Three wise men in Krizna Cave

Interpretation Panels in the Aragonite Cave Visitors Centre



What a shame state boundaries exclude the possibility of such an agency being established for Australian caves and karst. All caves belong to the State, and protection has been legislated. Any new caves discovered immediately become the property of the State.

Josef Hlaváč, the Director of the Institute, hosted us extremely well in Slovakia. Josef has a long caving background and a deep understanding of karst landscapes. This knowledge is no doubt a huge asset with the direction of karst management in Slovakia. He is also fond of a glass of fine red wine and imbibed some of Slovakia's finest with us one evening. We sincerely hope he and some of his staff will make it to Buchan for our 2007 conference so we may reciprocate this kindness. Pavel also added to our already burgeoning suitcases with some excellent books and journals.

After leaving Liptovský Mikuláš, we headed towards Austria, visiting Driny Cave (still in Slovakia) along the way. The walk up to the cave entrance through a remarkable Beech Forest was one of many highlights of our trip. Driny cave is a stark contrast to the large stream-developed caves of the Démonoska and Dominca cave systems, being tectonically-developed. Its passages are narrow, with high fissures. It is moderately well decorated with most shawls having sawtooth edges caused by breezes through the cave.

The manager, Peter Zonar, and a lovely female guide, Lucia Krupanska, showed us through the cave. They have tape players that provide interpretation in eight languages – again way in front of what we offer in Australia. This is not a highly visited site either, just 40,000 visitors each year. It is also home to a number of species of bats, which are very cleverly shown in the visitor centre (named the *Speleobar*) through a window that opens into the cave. Kent made the comment that it was the up-close best bat display he had seen, much to Steve's (and Brian Clark's!) protestations!

Slovenia (again)

In having driving across Austria on its autobahns, we arrived back in Slovenia. A cave in Northern Slovenia, Snezna Jama (which we 'christened' *Sneezy Cave*), had been on our must-visit list from

Andy's early planning. It is somewhat off the beaten track, to say the least! The drive seemed to go on forever, climbing a steep, essentially one-way, rubble road. An on-coming car generally caused some consternation, especially for whoever was sitting on the cliff side of the car.

We arrived at the cave entrance exactly in between the 11am and 1pm tours so we had an hour to recover our breath from the steep walk up to the entrance and to let our nerves settle after the drive. For 55 minutes it appeared we would have a nice quiet tour with one other couple, one of whom spoke very good English. Then a busload of beer-swilling Slovenes staggered up the hill, one of whom was using a megaphone to ensure everyone within a five kilometre radius could hear him. We thought Snezna Jama was going to be an experience - well it certainly was!

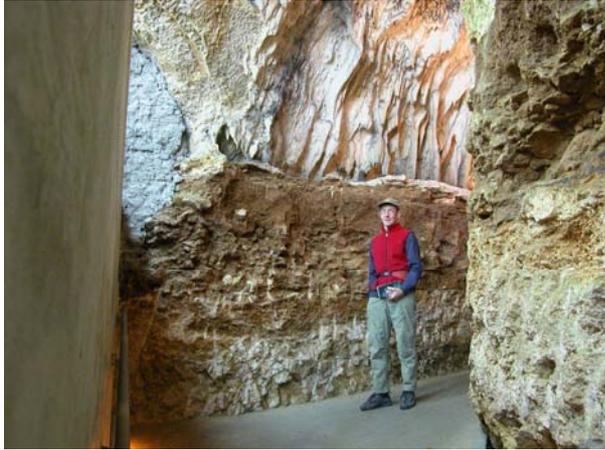
The cave is advertised with a lovely glossy brochure that shows a huge stalagmite column. It also informs visitors that part of the cave is electrically lit and the balance of the cave is viewed by handheld lights. The entrance to the cave is at the bottom of a large doline with a huge temperature gradient as you descend, where carbide lamps were distributed to the party - to every third person in our case, probably because it is a sizable party. The electric lighting consisted of four huge floodlights, powered by a generator outside the entrance, which managed to light the entrance steps and first chamber of the cave. Here we learnt just how cold steel handrails could be.

The impressive ice stalagmite shown on the brochure had partially melted and fallen over and looked nothing like what was promoted. Further into the cave some really impressive ice wedging was evident as well as ice fractured speleothems. About one hour into the tour the beer began to take effect on the Slovenes and one by one they dropped to the back of the group to relieve themselves of excess fluid. Either the guides were oblivious, or unconcerned, by this action. At the end of the cave came the real highlight, the bar and Slivovitch, a particularly potent local brew. It was just what our 'friends' needed to revive them after the long walk into the cave! After taking one and a half hours to walk to the back of the cave, the guides led us out in five minutes flat. This was particularly dangerous on uneven ground, icy conditions and only one light between three people. Sigh...



Enjoying a dram (or three...) of
Slivovitch in Snezna Cave

Neil Kell in the cut away entrance to the Biospeleological Museum, revealing chronology of cave filling and speleothem deposition



Cave tours to Snezna Jama are conducted by the local speleo group who have been doing so for over twenty years. It is an absolute credit to them that each weekend a group of them makes their way up the hill (= mountain in Australia) to provide tours. Only 3,500 people make the journey each year, so one feels we may have been in the largest tour party of the year. It was an experience!!

Italy

From Northern Slovenia we motored by freeway across the country to Trieste in Italy, staying overnight. We visited just one cave (on the outskirts of Trieste), the very appropriately named Grotta Gigante. This cave is in the Guinness Book of Records as the world's largest show cavern, with a volume of 600,000 m³. The signage warns of 500 steps in and out of the cave and not for those with

a weak heart! The approach of staff to visitor management was a fine example of how not to do it, although our guide did warm up later on tour. The cave is virtually a single chamber 107 metres from floor to ceiling, with the tour descending to floor level before climbing to a lookout about 100 metres up. Bottled oxygen is available on the climb out!

Tours depart on the half hour, with each guide taking four one-hour tours each day, a total of 4,000 steps. All were very lean and fit! Views in the cave are somewhat spoiled by scientific equipment that consists of two white nylon columns that protect steel cables, installed to measure earth tides, that hang from the ceiling right to the floor.

After our overnight in Trieste, we dropped Andy off there the next morning to pick up his own hire car. He was off to spend another two weeks by himself visiting caves in France (and visiting his sister who is currently resident therein), Switzerland, Austria and Italy. A report on his European peregrinations will appear in the March Journal. Steve and Kent drove back to Postojna for a final meeting, and lunch, with Bogdan before scurrying to Ljubljana airport to fly out.

Overall, it was a fantastic trip! We saw twenty show caves in twelve days (!!!), drank a large quantity of local brown beverage, and in Andy and Steve's case, a good deal of 'Hungarian Medicine' (very over-proof!) most nights before going to sleep! We are most grateful to the cave managers and their staff at all locations for looking after us so incredibly well. We are very hopeful we will see more than a few of our new friends at the 2007 ACKMA Conference at Buchan.



Bats viewed through a portal in the *Speleobar* (Visitor's Centre) at Driny Cave



Ice formation in Dobsinka Ice Cave



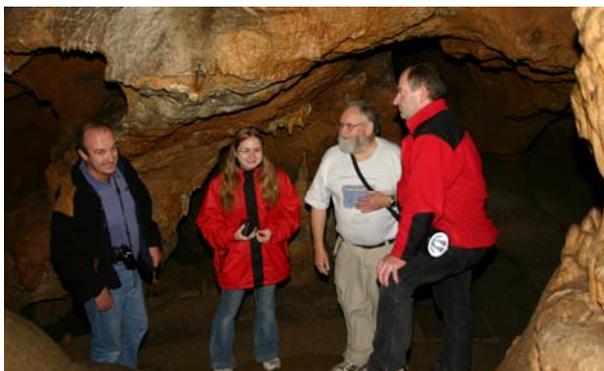
Steve Bourne, holding a carbide lamp in hand, in front of ice formations in Snezna Cave



At rest in the auditorium in Dominca Cave



Touring Predjama Castle in the footsteps of Erasmus



Touring Driny Cave



Folded shawls in Driny Cave



Massive mains in the Demanoska Cave of Liberty

