

A SHOW CAVE ROAD TRIP from OHIO to TEXAS

John Brush

A drive from Pennsylvania to Dallas in Texas by the most direct route on Interstate Highways is an easy 1400 mile (2300 kilometre), 21 hour trip. Or so says Mr Google. However, detour to visit a few show caves, look at a couple of non-karstic sights and throw in a rest break or three and it somehow became a 3500 mile (5600 kilometre), 16 day journey across 11 states.

In October last year, Marjorie and I took the opportunity of a visit to Pennsylvania to travel across a part of the United States that we had not previously seen. Rather than fly back to our departure point in Dallas, we decided to drive and take in some of the sights along the way, including obligatory stops at Marengo Caverns in Indiana (owned by ACKMA member Gordon Smith), Mammoth Cave in Kentucky (by far the longest known cave in the world) and the spectacular Caverns of Sonora in Texas. As we meandered our way south and west, we also visited a number of other show caves, including several that were recommended to us by Gordon.

In the end we squeezed in 14 tours in 11 caves operated by 10 organisations in 5 different states. Our original intentions were not so cave-focussed, but we were in the US at the time of the Government shutdown last year and so, with National Parks and other Government properties closed, we looked for alternative things to do.

Apart from Marengo Cave and Diamond Caverns, where our visits were complimentary, courtesy of Gordon Smith, all tours were paid for.

Ohio Caverns (Ohio)

The flat farming country of central Ohio does not look to be promising cave country. There is no outcrop and the landscape bears the hallmarks of glaciation. However, on approaching the cave property, a low ridge rises about 30 metres out of the corn fields and while there is still no outcrop, a signpost said there was a cave. Two tours are offered and we arranged to do both in a morning. Tim Grissom, the genial manager soon lined us up with a guide and we followed him onto a shuttle bus for the 500 metre journey to the original entrance to the cave and the one used for the Historic Tour. The cave originally had no entrance but was discovered in 1897 after a small amount of digging at the bottom of a depression. At that time, the passages were almost completely filled with sediment and so a great deal of material had to be removed before the cave could be opened to the public. In 1925, the digging broke through to open passages with spectacular decoration and after another entrance was excavated, the first section of cave was closed. It remained so until 1997 when it was redeveloped for the historic tours in



*The Crystal King, a 1.5m stalactite in Ohio Caverns
Photo: John Brush*

celebration of the centenary of the cave's discovery. The cave is a fissure-like system developed along joints. Passage cross section is typically T-shaped. There are two levels but only glimpses of the muddy lower level are seen during the 1.2 kilometre tour.

The Natural Wonder Tour is Ohio Caverns' most popular. It enters through another excavated entrance and meanders through more fissure passages, in places modified by breakdown of roof slabs. Not as much fill is evident in this part of the cave and there are many pure white stalactites and short columns. In places there is manganese and iron mineralisation, resulting in black, orange and red staining on walls. While the calcite speleothems do not appear to have taken up these colours, some have what appear to be a manganese and iron-rich base, or on some, a crust. An iconic feature of the cave is the Crystal King, a white conical stalactite.



Iron and manganese-rich speleothem growth in Ohio Caverns
Photo: John Brush



Staff member Larry Wyman in Marengo Cave
Photo: John Brush

It does not look all that impressive in photos lacking a scale figure, but in the flesh it is an imposing 1.5 metres long. The feature is seen towards the end of the 1.5 kilometre trip which emerges through yet another artificial entrance.

With the iron and manganese colourings and contrasting pure white calcite decorations, the cave lives up to its claim of being “America’s most colorful (sic) caverns”. The Natural Wonderful Tour is a must-see for all, while the Historic Tour will appeal most to fissure and wall feature aficionados.

Marengo Cave (Indiana)

Marengo Cave is set in a rich agricultural area in southern Indiana and is owned by Gordon and Judy Smith. Marjorie and I first met Gordon and Judy in 1997 during an IUS field trip in Switzerland. We have caught up with them on several occasions since and each time they implored us to visit their cave. Our trip last October looked like an opportunity. However, constraints imposed by our respective schedules meant that at the time we planned to be in Indiana, Gordon and Judy would be some distance away at a meeting of the US National Caves Association (the US-equivalent of ACKMA). Not to worry, Gordon said he would arrange for his staff to dust off the red carpet. And they did. The welcome was a bit embarrassing and were later shown through the cave on our own special tour by Larry Wyman, whose family has been associated with the cave for decades.

Marengo Cave was discovered by school-age children in 1883 and opened to the public later that year. A more convenient entrance was dug in 1910. In 1979, construction of a second entrance enabled through trips and the option of second tour route. In 1985, the cave was designated as a US National Landmark.

The 1600 metres Dripstone Trail starts at the 1979 tunnel and enters a spacious meandering fossil stream passage. The cave is developed in horizontally-bedded slabby limestones and there are extensive areas of flat roof and some large breakdown slabs. Much of the floor is silt or clay fill, but in places the fill has been covered by breakdown slabs or flowstone. There are areas of attractive decoration, including extensive gour cascades, both active and dry.

One of the largest parts of the cave is known as the Penny Ceiling Room. Here, a layer of sticky clay on the roof provides a welcome alternative to the wishing pools found in many other US and European caves. Many years ago, it was discovered that if a coin was thrown at the roof, it quite often stuck there. This soon evolved into a throw-a-one-cent-coin-and-make-a-wish-if-it-sticks tradition. Every so often, tall ladders are taken into the cave and the coins are laboriously picked off the ceiling for the benefit of local charities. To help boost the value of the haul, Gordon apparently likes telling visitors they get ten wishes for a dime (10 cents).

From the Penny Ceiling area, the trail continues along the spacious fossil stream passage and eventually reaches steps leading up to the 1910 tunnel, marking the end of the tour.

Rather than exit the cave at this point, we decided to continue straight onto the Crystal Palace Tour route with Larry. This is the shorter of the two tours offered at Marengo and appeals more to those who want wall-to-wall decoration and who don’t like long walks along spacious fossil stream passages. Near the entry point there is a large reflecting pond and there are plenty of opportunities for admiring the changing vista as the path skirts along one side. Beyond here there is extensive speleothem development. There are coloured flowstone cascades, massive columns large stalagmites and lines of delicate stalactites that have developed along roof joints.



*The Crystal Palace, Marengo Cave
Photo: John Brush*

With its spacious fossil stream passages and varied decorations, this cave is well worth a visit.

Indiana Caverns (Indiana)

This is America's newest show cave operation and had been in operation for only 4 months at the time of our visit. Even so, it had already attracted around 20,000 visitors. The tour takes place in a small section of Brinkley Cave, an active stream system with more than 50 kilometres of passage. Brinkley is currently the longest cave in Indiana and the 11th longest in the US. The show cave section is entered through a tunnel beneath the visitor centre. Beyond an air-tight door, imposing steel structures take visitors down to floor level. This upper level section has many bones of bison, bear and peccary - dating from the Pleistocene - that must have entered (fallen?) through an entrance that is now sealed. The route then descends to stream level where a series of metal catwalks and 'troughs' lead to a 2 metre high dam. The dam ensures there is sufficient water for the next part of the trip; a boat ride, and also serves as a boarding platform. The electric-powered boats hold about 20 people and take visitors along a muddy meandering streamway for a couple of hundred metres. The roof is not far above the boat and there is not a lot to see apart from some nicely-bedded limestone. After the boat turns around - quite a feat in the narrow



*Imposing metal staircase in Indiana Caverns
Photo: John Brush*

passage - it heads back to the landing and the party then retraces its steps back to the visitor centre. There is not much decoration to be seen on this trip but the bones are interesting and it is probably the lure of a boat trip that is the cave's main drawcard. As the same route is followed in both directions, there could be a few bottlenecks during busy periods.

Squire Boone Caverns (Indiana)

The cave was discovered in 1790 by the famous American pioneers Squire Boone and his elder and more famous brother Daniel. Squire lived in the area for many years and after he died in 1815, his remains were buried in a small vertical cave on the hillside above the show cave. Over the years his remains were subject to vandalism and 'souveniring'. So, in 1973 employees of the caverns transferred what remained of Squire to a new coffin and placed it in the show cave where it remains today as a feature of interest.

However, there are more interesting features in this active stream cave. The essentially linear cave is developed along a joint - a "good joint", our young guide told us "because it made the cave flexible, just like a human joint", as distinct from a "bad joint" (a bedding plane) which "makes the roof collapse". There you go,

the cave development process explained in just a few words. There is quite a bit of active speleothem growth in the cave and much of it is quite attractive. There are also some large breakdown slabs where the roof has broken away along some of those bad joints. For most of the show cave route, the stream is at a lower level, but the last part of the tour is along a metal walkway suspended just above stream level. In this area, large gours break the stream into a series of cascading pools. For many visitors, this area is the highlight of the trip, but for others there is time to admire Squire's coffin and headstone on the return trip to the entrance.

Mammoth Cave National Park (Kentucky)

The Mammoth Cave System was firmly established as the longest in the world in 1972 when cavers found a connection with the nearby Flint Ridge Cave System. At that time 144 miles (approx. 232 kilometres) of passages had been mapped. Ongoing discoveries, including linking passages to other caves, have seen the total length of surveyed passage grow through 300 miles (483 kilometres) in 1984 to the current total of a staggering 400+ miles (640 kilometres).

Many different tours into the cave system are offered on any one day and the tours change through the year.



*"I've never been in a cave like this before, there is nothing to see", apart from the loose rock above, perhaps?
Mammoth Cave, New Entrance Tour
Photo: John Brush*

Cameras are permitted on all tours but flash photography is not. This restriction appears to have been introduced only recently to keep groups moving along but its effectiveness is doubtful because long holdups occur as people unsuccessfully attempt to take photos using available light and others (including me) hold back looking for handrails or rocks to steady their cameras for time exposures.

The tours are very popular and it pays to book ahead, or as in our case, to arrive on the day the US Government reopened for business and be first through the visitor centre doors when they opened. Because of the government shutdown, there were not many visitors around on that first day. Our first tour, to the River Styx area of Mammoth Cave, had only 9 visitors (out of a permissible 40) plus 2 guides. The role of the tail end guide seemed to be to stop people wandering off and getting lost in the maze of passages and to ensure there was no flash photography. Over two and a half hours, our small party covered four kilometres as we wandered along a great variety of passages, including some with the remains of nitrate mining works (basically a guano mining and leaching operation). It was a very interesting tour.

By mid-afternoon, the crowds had started to roll in and for our next tour - a 1600 metre lantern tour of Great Onyx Cave - there were about 30 people (maximum of 40 allowed). The principal guide on this trip was an endless (and I mean endless) source of information on the cave, the Mammoth system and on the history of show cave 'wars' in the wider Mammoth area. The cave is on Flint Ridge, but a connection to the Mammoth-Flint Ridge Cave System is yet to be found. It has extensive calcite decoration near the entrance, but further in, it was mainly gypsum, commonly as a frosting on walls and floor. Unfortunately, much of the original floor was obliterated in the early days when a considerable volume of material was dug out and tossed aside to create a walk-through route in the low passages. With just eight kerosene pressure lamps distributed amongst the party, light levels were a little subdued, especially as the lamp holders tended to gravitate towards each other.

The following day we returned to Mammoth Cave for a New Entrance Tour. What a mistake. We feared this as we queued to wait for the (3) buses that were to convey the tour group to the entrance and fully came to appreciate it once we were underground with the 114 other visitors in the party (plus the obligatory 2 guides). Visitor numbers to the National Park were now back to normal levels, it seemed. This 2-hour trip has 500 steps, covers 1200 metres and is regarded as being of moderate difficulty. It is a popular trip as it passes Frozen Niagara, one of the few decorated areas in the cave. As much of the pathway was only one person wide, the party soon spread out, especially because some visitors had difficulty with steps, others had problems with the distance and a few had difficulties carrying their young (and at times screaming) children.

This was the cave tour from hell. Some people complained about the steps, or the distance or the lack

of decoration. Others complained they couldn't hear the guide. In a breakdown chamber, someone said "I've never been in a cave like this before, there is nothing to see". Someone even whinged about Australia: "why would anyone want to go there, it is just desert. You can see desert in Utah, which is much closer". To avoid an international incident, we decided to keep quiet and not to reveal our nationality. The trip was a combination of hurry up, wait, hurry up, wait, and move along now. What a contrast with our tour group of nine the day before.

Hidden River Cave (Kentucky)

Hidden River Cave is, as the name suggests, an active stream cave system that feeds water from part of the central Kentucky karst plateau into the Mammoth Cave system. The entrance is a large collapse doline beside the main street in the town of Horse Cave. The cave is operated by the American Cave Conservation Association (ACCA), a non-profit environmental organisation dedicated to the conservation of caves and karst, principally in the US.

For many years, the cave stream was the source of drinking water and hydropower for the town. It first opened as a show cave in 1912, but closed in 1943 because inputs of domestic and industrial sewage made the cave very unpleasant. These sewage problems were not resolved until the late 1980s and at about that time ACCA decided to attempt a restoration of the cave and establish a museum in an old building beside the entrance. Fast forward to the present and the operation appears to have been successful. There are no unpleasant odours in the cave and the cave critters have returned. The impressive museum covers local natural history as well as comprehensive displays on caves, caving and karst, cave biology and ground water quality.

A long set of steps leads down into the cave from the bottom of the doline. Near stream level there are rusty relics from the water supply and hydropower days. A



*Collapse entrance to Hidden River Cave beside the main street of Horse Cave
Photo: John Brush*

metal walkway above the stream is a good spot to see white cave-adapted crayfish. The walkway continues up to a huge dome chamber. From the end of the path in the chamber, huge sediment banks can be seen beside the stream away in the distance. The show cave route is only about 300 metres each way, but is sufficient to give visitors a feel for the historic uses of the cave and for how urban development and agricultural practices impact on the underground world.

Diamond Caverns (Kentucky)

Diamond Caverns is just outside the Mammoth Cave National Park in central Kentucky. It has been open to the public since 1859 and is the second oldest show cave in the area. It is adjacent to the route of the former railway line to Mammoth Cave and derived considerable benefit from this when the line opened in 1886. Over the years, the cave has had quite a few owners and in 1999 it was purchased by five cavers and their wives, including Gordon and Judy Smith.

The impressive visitor centre is a former accommodation lodge and Gordon and his partners have visions of turning it into a national museum for the show cave industry.

The way into the cave is down a flight of steps inside the visitor centre and at the bottom, the pathway follows along a fossil stream passage for a couple of hundred metres and then back. Along the passage a vertical drop



*Small solution pits in the roof of Diamond Caverns
Photo: John Brush*

leads to the underground stream, which has been proven to connect through to the Mammoth area, although no negotiable route has yet been discovered. Above the pathway, the passage walls are lined with long drapery displays and there are some very fine shawls. In a few places where there is no decoration, there are fine solution features, including half tubes, pitting developed along bedding planes and a honeycomb structure similar to the tafoni weathering sometimes seen on surface rocks.



*Blanchard Springs Cave, Arkansas
Photo: John Brush*

Blanchard Springs (Arkansas)

Blanchard Springs is a substantial stream cave system hidden away in a National Forest in northern Arkansas. It is not on a road to anywhere, so a visit requires a detour, no matter which direction you might be heading. However, the cave is certainly worth a detour. It has about 20 kilometres of passage on 3 levels, but visitors do not see any of the active stream level. In fact, only about 600 metres of the upper level are shown year round. A longer 2 kilometre trip is available over the summer, but was not available at the time of our visit.

From the visitor centre, twin elevators take visitors about 60 metres down into the cave. The main passage is an impressive 20-30 metres high and wide and is festooned with long fluted columns, large draperies and tall stalagmites. It is a most impressive chamber by any measure. The pathway meanders around the chamber and climbs to a higher breakdown section with more decoration and some huge guano mounds. A tunnel near the end of this section provides an easy route back to the surface where there is a bus waiting to transport the party 600 metres back to the visitor centre.

Cave Without a Name (Texas)

This cave without a name, near Boerne in Texas, could almost be called "cave without a sign" as, compared to the other show caves in the San Antonio area, it is not



*Marjorie Coggan with Manager Mike Burrell in Cave Without a Name
Photo: John Brush*

very well signposted. However, perhaps as a measure of reassurance, there is a sign on the wall of the Visitor Centre saying "This is it" and "You found us". The cave is owned by Tom Summers, who many ACKMA members will recall attended last year's conference at Waitomo.

We arrived at a quiet mid-week time and we were fortunate to be taken into the cave by Manager Mike Burrell. Before we headed underground, Mike showed



Spectacular decoration in Cave Without a Name

Photo: John Brush
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us a plot of the cave superimposed on Google Earth imagery, demonstrating how the cave extends under several properties beyond Tom's. Its 5 kilometre length is still being extended by cave divers.

Access to the cave is down steps in a curved tunnel beside the visitor centre. The steps then continue to spiral down around the natural vertical entrance shaft. At the bottom, the near-horizontal pathway is defined by aggregate sitting on the natural silt and clay floor. The passage is an estimated 10-12 metres wide and 5-8 metres high. Most of the decoration is massive, but small stalactites, delicate helictites and short straws occur high in the roof of the main passage and in a low section towards the northern end of the pathway. Towards the active stream end of the pathway, there is a multi-coloured drapery display and a large cascade of active rimstone pools. There are also some wide shawls and one of these has an unusual cluster of helictites that looks like an upturned bird's foot.

With just the two of us on the tour, it was a very relaxed, lengthy and interesting tour. Mike went to the trouble of detailing the history of the cave, pointing out obscure features and making sure we both had a good look at cave salamanders in the cave stream. It was one of the most informative cave tours we have ever experienced in an American show cave.

Caverns of Sonora (Texas)

Sonora is in rolling scrub country about 300 kilometres northwest of San Antonio. It is in the middle of nowhere and not much happens out there apart from cattle grazing and oil and gas production. From the road, there are just a few indications that this is oil country, but a quick look at aerial imagery reveals there are several hundred wells within a 5 kilometre radius of the cave. The wells not only point to the real wealth of the area, but also provide a clue about the origin of the cave. Unlike most limestone caves which are formed by weak carbonic acid solutions percolating downwards and dissolving the rock, this cave is believed to have been dissolved, at least in part, by sulphuric acid. The acid is formed when hydrogen sulphide originating in oil and gas reservoirs percolates upwards and oxidises as it mixes with oxygen-rich water. This is similar to how caves - such as the famous Carlsbad and Lechuguilla caves - are generally considered to have formed in the Guadalupe Mountains area of New Mexico.

The cave was discovered in 1955 and opened to the public in 1960. The visitor centre/ gift shop opened a year later. We arrived at the visitor centre not long after a tour had departed, but a helpful staff member kindly offered to take us down into the cave where we soon caught up with the tour, making a group of 6 plus the guide. Group size is limited to 12 and as we descended



*Caverns of Sonora
Photo: John Brush*



Top. The famous (and broken) butterfly decoration in Caverns of Sonora

Photo: John Brush

Bottom. The butterfly prior to the damage

Photo: www.sonoracaverns.org

deeper into the cave it soon became evident why this is so. Most of the passages are no more than a couple of metres wide and there is a profusion of decoration right beside the narrow meandering pathways. There is an understandable concern about vandalism and souveniring. After all, the cave's trademark butterfly formation fell victim to a vandal in 2006 when a wing was snapped off and apparently removed from the cave.

The density of decoration increases in the lower levels to the extent where there is speleothem growth on every surface. There are anthodites, helictites, coral growths, botryoidal encrustations, crystals, shawls and even some ordinary old stalactites and stalagmites, although some of these have coral or crystal encrustations. Some speleothems appear to have formed in water and today, a few shallow pools remain.

This is one of the most profusely decorated caves we had ever seen and was a fitting finale to our road trip.

Conclusions

With Gordon's assistance, the caves we selected to visit were varied, spectacular and interesting. All of them appeared to be in reasonable condition and were well managed. Considerable attention is paid to avoiding adverse impacts on the caves - ignoring, of course, the initial effects of developing the caves for public access. In all caves there were limits on party size, but having said that it would seem that the limits in Mammoth Cave are way too high. It might be a big cave, but having more than 100 people on a tour certainly detracts from the experience.

We saw virtually no signs of lampenflora in any of the caves (unlike some we visited in Pennsylvania and Virginia a couple of years ago). There was widespread concern about White-Nose syndrome, especially in caves managed by the US Government (eg Mammoth Cave and Blanchard Springs), where disinfectant procedures are in place.

The quality of tour commentaries varied but was generally reasonable. Two of the Mammoth area commentaries were excellent and comprehensive. It is not possible to comment meaningfully on all commentaries as on five of our 14 visits, it was just the two of us plus a guide and two of those trips were put on especially for us. On such small tours the normal commentary is usually dispensed with, especially when the guide becomes aware that we have been into a cave or two before, and it becomes a more personal, interactive and informative experience. On one or two of the other tours, explanations of cave formation processes were sometimes a little wide of the mark, either as a result of over-simplification or perhaps because a key point was omitted by the guide.

All caves allowed the use of cameras - free advertising as Tom Summers put it at Waitomo last year. But in some cases, it was stressed that tours must not be held up by photographers. Fair enough. Most operators ban tripods and some do not allow the use of video cameras and, as noted above, the Mammoth Cave National Park prohibits flash photography. In most caves, backpacks, camera bags and the like are not permitted.

In addition to the standard guided tours, all of the operations we visited had additional revenue-generating features. These varied from cave to cave but most commonly included a gift shop carrying a wide range of products (not always cave-related), adventure caving trips, underground musical performances and panning for gold/gemstones. At some caves ancillary activities and services like eateries, historic displays, canoe rental, zip-lines and camping were also available.

If we are able to do another trip to the US, the show cave at the top of our wish list just has to be one in Missouri where tours are conducted in jeeps. Just think, no steps, no walking.