

## SHOW CAVES in ICELAND

John Brush

Canberra Speleological Society Inc

*“For the first time in history, you can experience a volcano – from the inside”* and *“First steps in the journey to the centre of the earth”* are just two of the catch-phrases seeking to attract visitors to the only two caves in Iceland that have been developed as show caves.

Of course, given its location on the mid-Atlantic ridge, Iceland is volcanically active and there are many lava tubes - or caves - in some of the younger lava flows across the country. Quite a few caves can be visited on commercial adventure trips, but only two - Thrihnukagigur and Vatnshellir - have regularly scheduled tours and have significant infrastructure installed for the safety and comfort of visitors and to minimise visitor impacts on the caves. In May this year, Marjorie and I had an opportunity to visit both of these caves.

The driving force behind the Thrihnukagigur and Vatnshellir developments is Árni B Stefánsson (Árni), a Reykjavik-based medico and ardent conservation-minded caver. Árni has been exploring caves in Iceland for most of his life and has become increasingly concerned about the damage being done to them. A number of caves that Árni discovered or first explored in his youth are now almost unrecognisable to him. Caves once richly decorated with delicate features such as lava stalactites and stalagmites are now trashed. Árni believes the damage results from a combination of pure vandalism and souveniring as well as unintentional breakage through carelessness or ignorance. This makes him sad. He believes all caves should be approached with humility and that they should be treated with respect and kept in a condition that people would be proud to pass on to future generations. In the last decade, Árni has been on a mission to lobby for better protection for Icelandic caves, to repair some of the damage, to find ways of minimising visitor impacts and to help the general public gain a better understanding and appreciation of the wonderful and spectacular, but delicate, world of lava caves. Without his vision and determination, it is highly unlikely that either cave would be able to be appreciated by ordinary members of the public in a manner that protects both the cave and its visitors.

### Thrihnukagigur (“Inside the Volcano”)

There is something special about being able to descend into the throat of an old volcano. Usually, such an experience is only available to cavers with SRT (Single Rope Technique) experience. It hardly needs to be said that this is only possible when the volcano is no longer active and where the lava has retreated to leave an open cavity. A local example is The Shaft, a 30 metre-deep volcanic vent at Mt Eccles in western Victoria. As spectacular as this is, it pales into insignificance compared to the huge chamber beneath Thrihnukagigur, a 4000 year old volcanic vent in the hills just outside Reykjavik.

The 120 metre entrance drop into Thrihnukagigur, or more correctly Þrihnúkagígur, which translates as



*Trudging across snow-covered lava on the walk to the Thrihnukagigur volcano.*

*Photo: John Brush*

Crater in The Three Peaks, or The Three Peaks Crater, has been known to the locals for many years. It was first descended by Árni in 1974. He was hoping to find a large underground drainage channel with lava falls and other flow features, but at the bottom all he could see was breakdown and he thought it was ugly. However, his views changed on subsequent visits. While mapping the shaft with his brother in 1991 he realised there was beauty in its immense size and the relative insignificance of a human within it. It was only in 2010 when he returned with a *National Geographic* film crew with bright photo lights that he clearly saw the highly coloured walls of the huge chamber for the first time.

Árni first proposed opening Thrihnukagigur to the public in January 2004 after many months of design



*The final approach to the Thrihnukagigur crater.*

*Photo: John Brush*



*Marjorie on the summit of Thrihnukagigur, waiting for the lift platform to arrive from inside the volcano.*

*Photo: John Brush*

and consultation work. However, it then took years to undertake detailed feasibility studies, develop access plans and obtain the necessary approvals. A task made more challenging because the crater lies within a sensitive nature park. Tours started on a trial basis in the summer of 2011 and such was the public response that operations commenced on regular basis the following year. There are now tours several times a day between mid-May and the end of September.

On the day of our tour in late May, it was sunny but cool in Reykjavik. However, 30 minutes later when we arrived



*On the floor of the Thrihnukagigur chamber. The ropes are to keep visitors off untrodden areas and away from rockfall-danger areas.*

*Photo: John Brush*

*useful, not least because it's always the same temperature inside the crater –about 4°C”.*

From the Inside the Volcano building at Bláfjöll, where long rain capes were offered to everyone, it is a three kilometre, 40 to 50 minute walk to the base camp building at the foot of the volcano. Normally, even for trips in May, the walk would be across a rough lava field. However, because of the lingering effects of winter, almost the entire walking route was still snow covered. This was easier on the ankles, but it was hard work and everyone got wet feet. At base camp, our party (the maximum party size is 15 persons) was divided into groups of four to six and fitted with climbing harnesses, helmets and lights. Then, at regular intervals, the groups were led up to the crater rim for the descent.

At the crater, the lift assembly and approach walkway are suspended from a gantry erected over the shaft. The lift is a modified window-washing platform for tall buildings. It has a capacity of eight people (seven plus an operator). Staff were most insistent that our



*View of the approach walkway and lift platform for the Inside The Volcano descent. The wheels on the side of the platform are to keep it clear of the walls in a narrow part of the shaft.*

*Photo: John Brush*

at the meeting point at Bláfjöll, Reykjavik's local skiing area, it was bitterly cold and snowing. And, although it was almost summer, the ski slopes still had better coverage than Thredbo usually does in mid-winter. Fortunately, we had taken heed of advice on the cave's website that *“the weather in the mountains can be very different to the city. A warm sweater and jacket are very*



*A view along the immense cavern of Thrihnukagigur showing the breakdown floor and multi-coloured walls.  
Photo: John Brush*

harnesses were securely attached to either the approach walkway or the lift platform at all times until we had safely reached the bottom.

The descent takes about 6 minutes which is almost enough time to take in the views. There is plenty to look during the descent as powerful floodlights mounted under the lift platform light up the walls. As the upper part of the shaft is only a few metres wide there are close-up views of the lava dribbles and stalactites of the glazed lining - the solidified skin of the original walls of the shaft.

Further down, the glazed lining has broken away and the chamber bells out into an immense cavern. The floor is an uneven jumble of breakdown blocks and covers an area about 50 by 70 metres. After leaving the lift platform, we had 30 minutes to wander about the cavern at will, so long as we stayed within an area defined by rope barriers. The barriers are designed to limit the area of visitor impact and to keep visitors away from areas more likely to be subject to rockfall, such as directly under the shaft. At all times when visitors are present, there is a guide stationed at the bottom to keep a watchful eye on things. Beyond the barriers, the floor drops away steeply and has been explored to a depth of about 200 metres.

The cavern is illuminated with several well-positioned flood lights and it hardly necessary to use our helmet lights. The lights vividly show the multitude of colours on the walls and also highlight a small but steady stream of water falling from somewhere in the upper reaches of the shaft.

One of the most impressive sights is simply gazing upwards and watching the lift platform light up the flow and drip features of the glazed lining as it passes through the narrow part of the shaft.

After we returned to the comforts of base camp we were given bowls of a tasty hot soup; nicely warming. Then, when everyone was ready, it was time for the walk back across the snow.

We were impressed with the efficiency of the whole operation and with the emphasis placed on safety issues. It was also pleasing to see the efforts that had been made to minimise visitor impacts both in the cave and around the crater. Our only concerns were that our guide did not seem to have a detailed knowledge of volcanoes or lava caves and also let the party spread out more than we considered was appropriate for the conditions while walking across the snow-covered lava field.

The *Inside the Volcano* tour is truly awe-inspiring and spectacular. It is not surprising to learn that it is rapidly



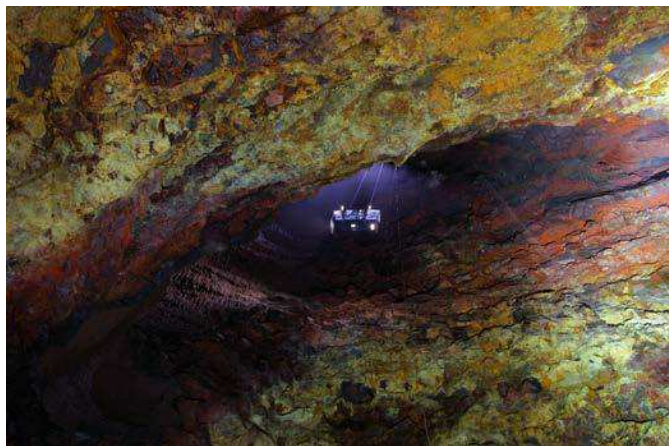
*Looking straight up towards daylight and small entrance throat of Thrihnukagigur. The streak left of centre is a small waterfall.  
Photo: John Brush*



*Looking up the Thrihnukagigur shaft as the lift platform descends. The area illuminated by lights on the platform is part of the original glazed lining of the chamber.  
Photo: John Brush*



*Looking straight up the Thrihnukagigur shaft and the approaching lift platform. Part of the intact glazed lining of the shaft can be seen to the left of and below the platform.  
Photo: John Brush*



*The cold walk back from Thrihnukagigur.  
Photo: John Brush*

becoming a ‘must-do’ for many visitors to Iceland, despite the high price. A ticket for the half-day round trip from Reykjavik costs about \$400. At first glance this seems expensive, but is more reasonable when considered in the light of the small group size, the high staff to visitor ratio, the short 18-week season, the limited capacity of the lift, the safety gear and infrastructure costs and the fact that the price includes transport from, and back to, hotels in Reykjavik.

Árni is not involved in the day-to-day running of the Inside the Volcano operation but oversees safety issues, research and environmental aspects, including the minimal impact approach and the cave preservation and respect signals that are communicated to the public. He also has plans for a 200 metre access tunnel into the volcano. The tunnel, leading to a viewing platform near the top of the main cavern, would make public access easier and safer. Árni envisages a spiral staircase to the bottom for those visitors who wished to go all the way down. The proposal is slowly progressing through government approvals processes and after that, the proponents will address funding options.



## Vatnshellir

Vatnshellir, literally ‘water cave’, is considered to be about 8000 years old, making it one of the oldest lava caves known in Iceland. The cave is quite short - around 200 metres - but it has a good range of lava features and is developed on two main levels that are separated by lava falls about 12 metres high.

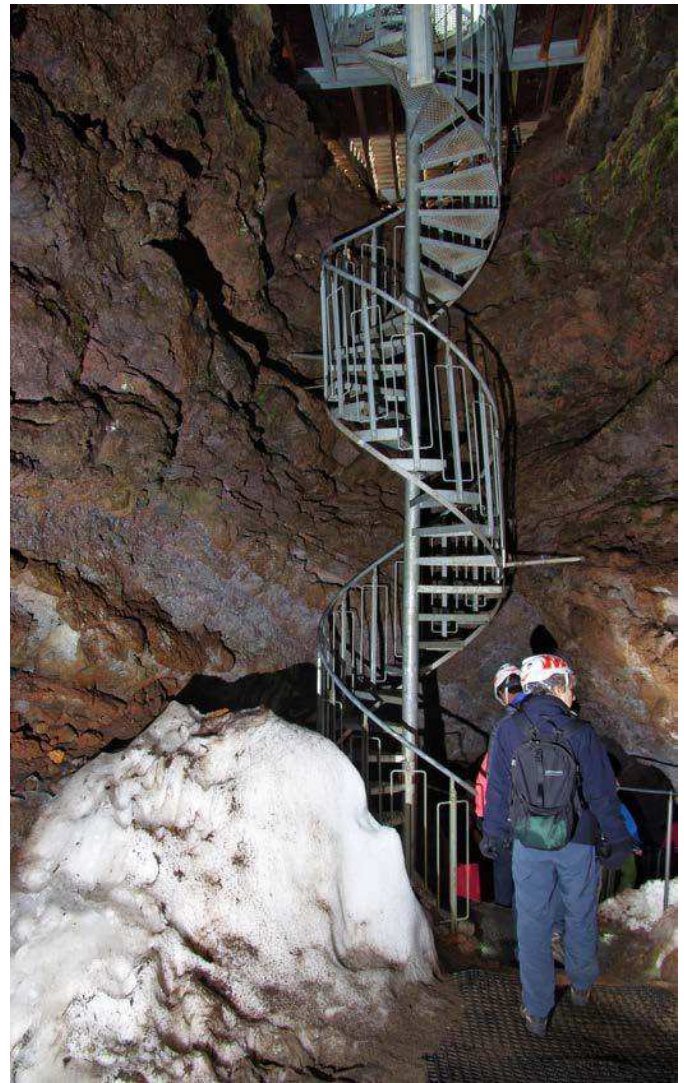


*The Vatnshellir ticket office and beside it, the path leading to the cave. The source of the lava that formed the cave is the Snæfells volcano (now dormant) in the background.  
Photo: John Brush*

The cave is on the southern side of the Snæfells Peninsula, about 200km by road northwest of Reykjavik. It has been open to the public for guided tours since 2010. The show cave operation is low-key and operates out of a small cabin beside the main road around the peninsula. Metal stairways have been installed for easy access and in more sensitive parts of the cave, the route is defined by ropes suspended from metal stakes. There is no electric lighting, but all visitors are issued with large LED torches. From the cabin, where tickets are sold and the torches and helmets are issued, it is just a 50 metre walk to the entrance.



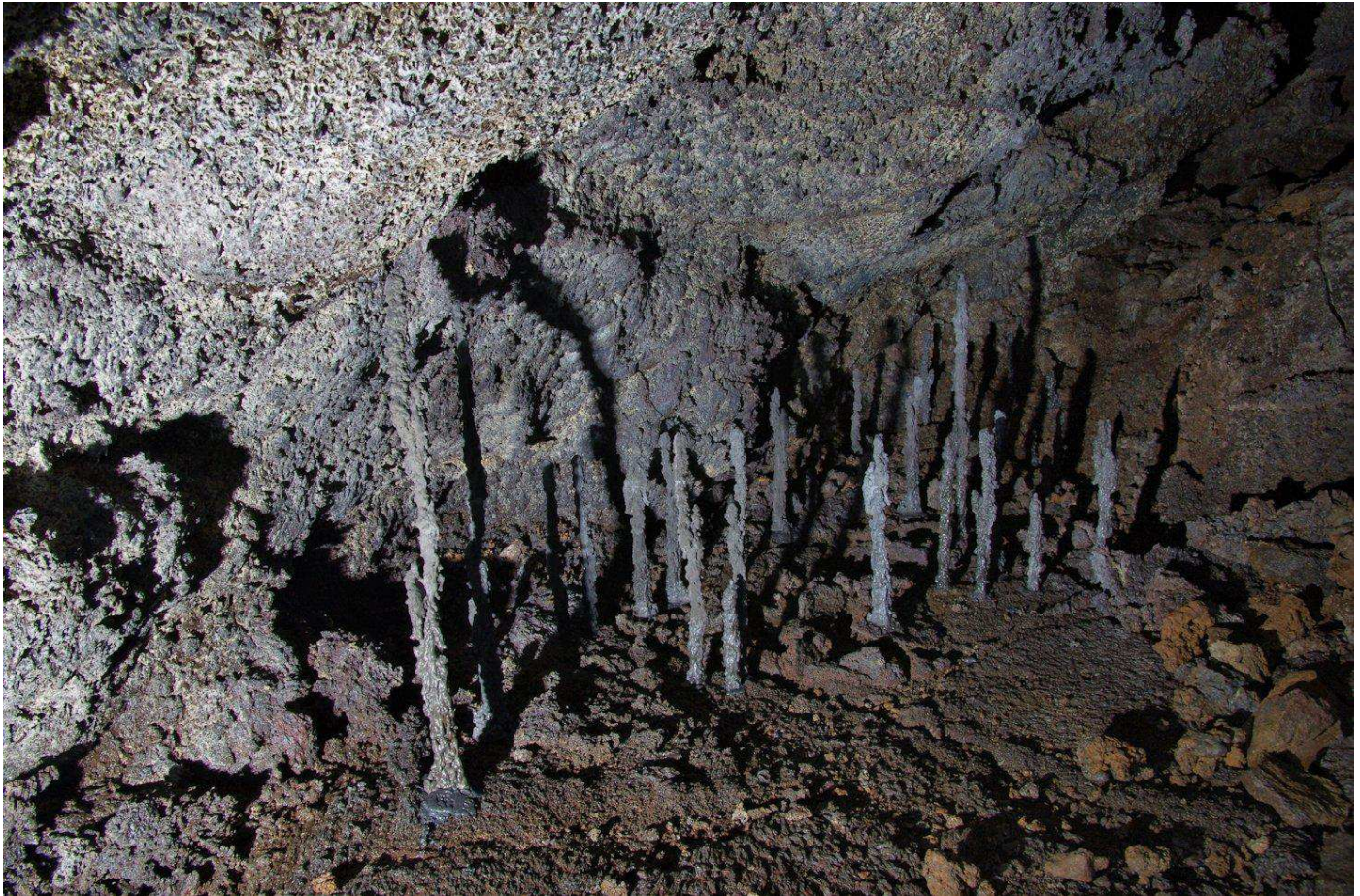
*The entrance to Vatnshellir with the dormant Snæfells volcano in the background.  
Photo: John Brush*



*The spiral staircase at the Vatnshellir entrance. The white heap (at left) is snow that found its way in during winter.  
Photo: John Brush*

A steel-framed platform has been built over the collapse entrance and near its centre there is a vertical cylindrical structure with a door. As our guide opened the door, we could see an impressive spiral stairway leading down into the cave. The stairway drops about 8 metres into a spacious passage averaging several metres high and wide. In places, the original lava floor and glazed wall linings of this upper level are intact, but some lining has broken away, creating piles of black, orange and red lava breakdown along the passage.

Towards the up-flow end of the cave, our guide proudly pointed out an impressive ‘forest’ of lava stalagmites up to about half a metre tall. What the guide didn’t say, or perhaps was not aware of, is that all of these were created in Árni’s backyard workshop. Using silicone moulds of repaired stalagmites and broken fragments retrieved from cave ‘looters’ and from the floor of trashed caves, Árni experimented with various materials and powdered pigments until he was satisfied with his facsimile stalagmite creations. So far, he has made around 70 stalagmites and about half of them were destined for ‘restoring’ another cave in the Snæfells



*The forest of lava stalactites 'recreated' by Árni B Stefánsson in Vatnshellir  
Photo: John Brush*



*Upper level passage in Vatnshellir.  
Photo: John Brush*

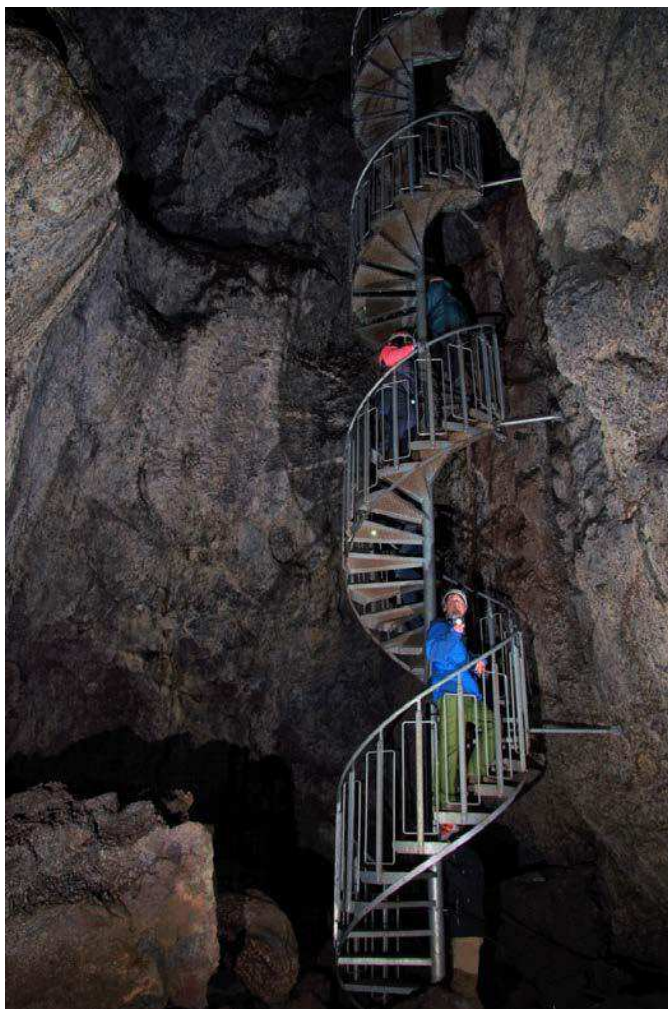
area, but upon reflection, Árni decide to install them in Vatnshellir as part of the cave development project and where they would be afforded greater protection and have more educational value.

From the end of the cave, our group retraced its steps to the spiral staircase and then continued further down into the cave. The guide pointed out some nice lava benches in bright red lava, and nearby, a pair of chunky stalagmites. These are known as The Twins and were once an iconic feature of the cave. Unfortunately, in the

years following the cave's discovery in the early 1990s, they were both smashed to pieces. Some years ago, Árni laboriously gathered the broken fragments and hid them in the cave in the hope that one day they could be put back together. In fact, it was the destruction of The Twins that started Árni thinking that turning Vatnshellir into a show cave was the best way of protecting it. Árni's dream of mending the stalagmites subsequently became an integral part of the cave development project – they were temporarily removed from the cave for repair and then returned to their original locations. Another broken stalagmite, known as The Thumb, and reputed to be one of the largest stalagmites ever found in Iceland, was too large to remove from the cave and so was repaired in-situ.

A second spiral staircase with four complete revolutions descends 12 metres beside the lava falls to the lowest level of the cave. Some of this passage is narrower than the upper level but it is taller and in places, a roof canyon can be seen. Near the lower end of the cave, the tour ends at a point where a small but steady flow of water issues from the roof. Here the guide picked up a ladle and offered to pour some "pure cave water" into our cupped hands for tasting. With our limestone caver's mentality of not knowing where the water might have come from, we declined.

A guided tour of the cave costs about \$25 and takes around 45 minutes. The cave is open year round with tours on the hour in summer and three times daily in winter. On our late afternoon trip, there were nine



*Spiral staircase to the lower level of Vatnshellir.  
Photo: John Brush*



*Returning along the upper level passage.  
Photo: John Brush*

Even though Vatnshellir is in the Snaefellsjokull National Park, it had been afforded little protection and was being increasingly damaged. This deeply concerned Árni and it was almost a decade that he first thought of protecting the cave by gating the entrance and restricting access to guided visits. He started lobbying government agencies and also engaged the support of the local community, service clubs and local businesses. In 2009, the National Park agreed to his proposals. The Iceland Environment Institute, which oversees National Parks, offered funding which covered about one-third of estimated development costs, but it was only with financial support from the local council, donations of equipment, work and time by local businesses as well as volunteer labour and contributions from Árni's own pocket that the project became a reality. When the work was completed, the cave was handed over to the National Park to operate and it opened to the public in 2010. In 2013, the National Park leased out the show cave to a private operator without consulting the local community or most of others involved in the original development work, much to their consternation.

### **Other Caves**

In addition to the above show caves many other caves can be visited on commercial adventure trips. A quick browse through brochures in Tourist Information Offices in Reykjavik and Akureyri suggests about a dozen different companies are offering cave tours and a web search reveals even more. Caves in all parts of the country are on offer, but those within easy reach of Reykjavik appear to be the most popular, with Leiðarendi (in English this is usually spelt as Leidarendi, but is more accurately rendered as Leitharendi) probably being at the top of the list.

Leiðarendi is only 30 minutes' drive from Reykjavik and appears to have adventure trips into it every day. When we visited the cave in 2002, it was relatively unknown, in good condition and locating the entrance in a trackless, moss-covered lava field was tricky. However, within a few years, the cave's location was published in a book, adventure trips had become popular, damage to the cave was becoming evident and the surface area above the cave was suffering from multiple tracking and trampled vegetation. Once again Árni started lobbying and in 2008 his proposals for some protection measures were



*Lower level passage in Vatnshellir.  
Photo: John Brush*

visitors and we felt this was an appropriate number for the cave. However, promotional material for the cave tours suggests groups can have about 20 people, which would not be such a pleasant experience.



*Staircase below the entrance spiral in Vatnshellir. Note the lava bench, in bright red lava, on the left side.  
Photo: John Brush*

accepted. Now, parts of the cave are protected by simple rope and chain barriers, there is some basic interpretative information in the cave and there is a clearly defined and gravelled track to the entrance.

Promotional material for adventure tours into the local lava caves seems to emphasise “excitement”, “exploration” and “adventure” and, as some of the caves on offer are among the most spectacular and delicate in the country, it would be nice to think that tour operators respect the caves, impart appropriate messages to their clients and closely control their actions. However, many caves have no access controls or clearly delineated routes through them and in the absence of formal codes of practice, I believe there is considerable cause for concern about the long-term impacts of adventure trips, as well as uncontrolled access, on the caves. Even for Leitharendi, a quick perusal of images on the web shows there is still plenty to be worried about, but for the sake of Árni’s stress levels, let’s not tell him that.

### Acknowledgements

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In addition, I thank Árni for reviewing drafts of this article for factual accuracy. Responsibility for all comments, however, rests with the author.

### Sources

The content of this article was derived from a range of sources including:

- Information imparted by tour guides.
- Discussions with Árni B Stefánsson.
- Cave websites: [www.insidethevolcano.com/the-volcano](http://www.insidethevolcano.com/the-volcano), [www.vatnshellir.is](http://www.vatnshellir.is)
- Promotional brochures published by Inside the Volcano and Vatnshellir.
- *Feasibility of Public Access to Þríhnúkagigur* – a paper presented by Árni B Stefánsson at the 11<sup>th</sup> International Symposium on Vulcanospeleology, Azores, 2004.
- *The preservation of Þríhnúkagigur and the status of the studies of the feasibility of access*, a paper presented by Árni B Stefánsson at the 13<sup>th</sup> International Symposium on Vulcanospeleology, Jeju Island Korea, 2008.
- *Þríhnúkagigur*, a paper presented by Árni B Stefánsson at the 16<sup>th</sup> International Symposium on Vulcanospeleology, Galapagos Islands, 2014.
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- *The Vatnshellir Project - a first for Iceland - update*, a paper prepared by Árni B Stefánsson for the 19<sup>th</sup> ACKMA Conference, Ulverstone Tasmania, 2011.
- *The Vatnshellir Project - a first for Iceland - update*, a paper prepared by Árni B Stefánsson for the 19<sup>th</sup> ACKMA Conference, Ulverstone Tasmania, 2011.