

Wendelstein Höhle (Cave), Bavaria, Germany

By Garry K. Smith ©

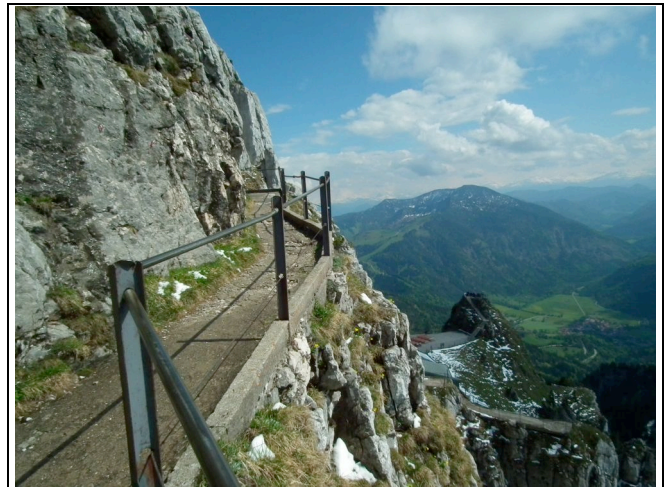
Originally published in 'Journal of the Australasian Cave and Karst Management Association' (ACKMA) No. 92 September 2013, Pages 29-32.



Panoramic view of the visitor facilities and surrounding landscape. Photo: Garry K. Smith

The Cave and Location

The Wendelstein Höhle (pronounced – ven-dell-styne hooler), which in English means “spiral stone cave”, is a cave system located within a 1838m high limestone mountain peak of the same name. It is in the far south of Germany at the eastern end of the Bavarian Alps. The natural cave entrance is at an elevation of 1,711m ASL making it the highest altitude show cave in Germany^[1]. The ‘Show Caves of Germany’ website class this cave as an Alpine Cave due to its elevation and describe it “as probably the most extraordinary show cave of Germany, just because of its exposed location”^[2]. This is a self-guided show cave and visitors are welcome to amble through at their own pace, taking in the surroundings and literature at the interpretive stations. There were 35,800 visitors to the cave in 2012.



Track to Observatory. Photo: Garry K. Smith

Snow and ice decorations can be found almost year round in the “Cold Trap” just inside the natural entrance of the cave.

Getting To The Cave

The cave can be reached by catching the privately owned BOB train from Munich to Bayrischzell and getting out at the Osterhofen station^[3]. There is a 5 minute walk to the cable car (gondola) bottom station which takes visitors to the restaurant near the top of the mountain in 8 minutes. From the restaurant there is a 5 minute walk to the cog railway train - top station and follow the ‘Höhle’ signs to the turnstile and cave entrance.

Alternatively take the DB (German National Railways) Munich – Rosenheim – Kufstein train. Get out at Brannenburg then it is about a 30 minutes walk to the rack (cogwheel) railway valley station (signposted).



Entrance tunnel into Wendelstein Höhle.
Photo: Garry K. Smith



The natural entrance as viewed from the Cold Trap Chamber.
Photo: Garry K. Smith

The 30 minute train ride up the mountain takes visitors right to the cave entrance. This is Germany's oldest operating high mountain railway. Construction started in 1910 and it commenced operation in 1912. The original train and wagons were replaced with modern ones in the late 1980's. The scenic rack railway route is 9.95 km long and has seven tunnels, eight galleries, twelve bridges and many retaining or supporting walls^[3].

Cave Visit – A Personal Account

In spring (late May 2013) my wife and I caught the train from Munich to Osterhofen station. This is a very pleasant journey through ever changing countryside. From Osterhofen station there was no obvious sign indicating how to get to the cable car station, however the overhead cables pointed to the building we had to get to. There are two ways; under the rail line then along a narrow track through paddocks, alternatively follow the road over the rail line and weave your way through a number of narrow streets. We used both routes during the course of our day trip.

The ride on the cable car was excellent and afforded spectacular views during the ride up to the Wendelsteinhaus restaurant – have your camera ready.

The walking path from the top station/restaurant was well signposted 'Höhle' to the cave entrance. A very pretty sight with thick patches of snow everywhere. Despite the sunshine, the light breeze and ambient temperature probably around 5°C, made it a little nippy – thankfully we were prepared with jackets.

The staircase down the artificial tunnel into the cave was well lit and easy to negotiate, however I would have to say without gloves, I think my hands would have stuck to the freezing metal pipe handrail. So be prepared with gloves. As we descended a couple of tourists heading out, commented "hope you have a raincoat". They were right, as it was rather wet with melt water pouring from above along most of the cave pathway. Thankfully we had an umbrella, which was put to good use. First time I have needed an umbrella for the full length of an underground cave tour. The 'Cold Trap' chamber contained a substantial quantity of snow and ice on the slope leading from the natural entrance and there were a considerable amount of ice sculptures, which looked pretty good. However, not all the seepage water freezes in this chamber as we stood on the observation platform under our umbrellas to avoid being soaked.

The entrance tunnel and majority of the cave passage was narrow, making it rather difficult to pass visitors going in the opposite direction. An umbrella certainly added to this dilemma.

There were four multi-media stations with themes covering biology, geology, psychology and philosophy^[4]. These touch screen interactive stations could be viewed in a variety of languages (including English). I found the information to be generally non specific and extremely basic, although each presentation did end with thought provoking questions. The information provided is probably reasonable

given that a reference papers states that the stations were designed for visitors with an attention span of 4-5 minutes per station^[4]. During our visit the multi-media station at the 'Cold Trap' was not operating, however given the freezing conditions and constant streams of water pouring everywhere from the ceiling, it is no wonder there are occasional failures of electronic equipment. Thankfully all the excellent LED track lighting was working.

Overall the cave was worth seeing despite the rather wet conditions and I did manage to get some reasonable photos without slave flashes. The alpine cave has some very interesting features and the scenery above ground is truly spectacular (thankfully we had a clear day – bad weather would have been another story).

Comments on Management

With regard to cave management and tourism, I would have thought it prudent to advise visitors to be prepared by bringing warm clothes, gloves, substantial if not waterproof footwear and include a raincoat with a hood, however I could not find this information in any of the available literature. We went prepared for the cold conditions, despite this my wife became cold after 20 minutes, as her gloves absorbed water from the entrance tunnel handrail and both our shoes became saturated from the splashing water.

In a number of places where large quantities of water was really gushing from the ceiling onto the tourist path, it would make sense to have installed a couple of shields to redirect the stream. I will say the path way was well drained through the inlayed gravel floor and there were very few places where water pooled.

Overall the lighting was excellent but I personally found the interpretive stations lacking somewhat in content specifically relating to the cave in question.



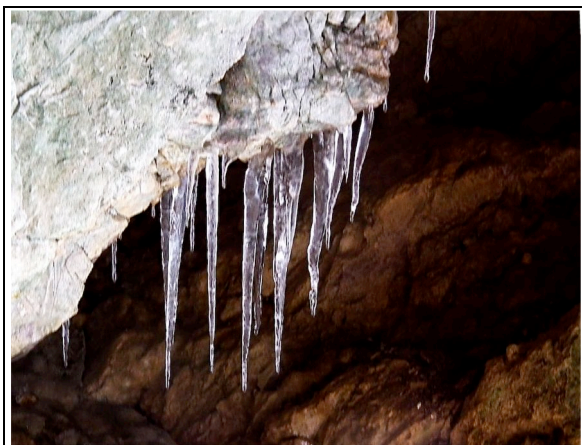
General Information About The Cave.

At 1711m ASL this is the highest altitude show cave in Germany. The natural entrance to the cave is located at the foot of a southeast wall just 127m beneath the summit and approximately 1400 metres above the present Leitzack River valley at the town of Osterhofen (310mASL).

Visitors walk just 30m from the coin operated turnstile to the excavated tunnel entrance. This is a steep (12m) tunnel, containing 82 stairs which lead into the main passage of the natural cave. This excavated tunnel was constructed to improve safety due to possible snow and rockfall at the natural entrance and allow visitation during inclement weather. The cave is 573m long, of which 170m is open to the public. Vertical range of the cave is 106m and mean average air temperature inside is 3°C except for the 'Cold Trap' which is at or below 0°C^[1,6].

After descending entrance tunnel to the cave passage, the natural entrance chamber can be reached by turning right and proceeding just 30 metres. This rather impressive chamber called the 'Cold Trap' has a 17m high ceiling. A shaft of daylight from the entrance partly illuminates the steep snow covered slope and the reflected light provides a soft light to the rest of the chamber.

There is a tourist observation platform in the lower part of the 'Cold Trap' where the cold air is trapped (as the name suggests), thus freezing some of the incoming seepage melt water to form icicles and other fascinating ice sculptures. These ice forms stay in tact for most of the summer^[2].



Icicles in the Cold Trap Chamber. Photo: Garry K. Smith

To the left of the entrance tunnel the main passage is wide and about 3 metres high. This part of the cave has plenty of air circulation and is almost as cold as the 'Cold Trap', however the passage soon becomes narrow and up to 15m high. After 170m the path ends in the 'Dome' also known as the 'Cave Cathedral'. Despite its name, this is not a chamber, but a junction of three passages. The air temperature of the cave at this point is approximately 3°C^[1,2]. The 'Dome' is the end of the tourist route and contains the last of the interpretive station. There is a crucifix fitted to the wall at this point and high above are some good examples of stream meander niches carved into the ceiling. On the way out I could see other meanders in the ceiling at approximately the same height.

The cave is lit by an energy efficient 2x3-watt LED light system which has a backup power supply in the event of a mains electricity failure^[5].

Geology

Wendelstein mountain is mainly Wettersteinkalk (Wetterstein limestone) from the upper Triassic, consisting mainly of Dasycladacean algae (Chlorophyceae). These are marine algae, which inhabited shallow lagoons in a tropical climate. The color of the stone varies from light gray to gray-white and spotted^[1].

Over millions of years the limestone was uplifted to form rolling hills and the Wendelstein Cave was created by a stream which had its catchment area to the West and South.



A multi-media information station in Wendelstein Höhle.
Photo: Garry K. Smith



LED track lighting through Wendelstein Höhle.
Photo: Garry K. Smith

After the river had cut into the limestone to create the cave about 60 million years ago, the northern rim of the Alps continued to be uplifted and folded to the point where the river no longer ran through the cave. Uplifting, folding and valley erosion continued over millions of years till the limestone containing the cave became the high peak it is today^[1,2,4].

In general, the Alps mountain range was a result of the African and Eurasian tectonic plates colliding and causing the marine sedimentary rocks to be thrust upward and folded over hundreds of millions of years^[1].

The German Show Caves Website describes the cave as a “fissure cave, a narrow gorge formed along a vertical fissure in the rock, with impressive erosional forms, but no big chambers and no speleothems”^[2]. (After viewing the 3D cave model and visiting the cave, I personally have some reservation relating to this cave being accurately described as a ‘fissure cave’. – I will leave it to others to debate this aspect.)

The cave is formed in fossil-rich Triassic Wettersteinkalk, and fossils can be seen at various locations along the cave walls^[2].

Opening Times and Entry Fee

Wendelstein Höhle Depends on snow and weather conditions, it is normally open between May and October to coincide with operating hours of the cable car and cogwheel railway^[2]. Cave entry is 2€ per person (must have 2€ coin) payable at the automatic turnstiles next to the cogwheel railway top station.

Cable Car (Seilbahn) - Operating times: during summer season daily 9 am to 5 pm every full hour and in winter 10 am to 4 pm every half hour, subject to weather conditions^[3]. Single adult return ticket is €20.00, Children (6-15yo) €14.00, Families (2A+2C) EUR €44.00

Rack or Cogwheel Railway (Zahnradbahn). Operates the same hours as the cable car, subject to weather conditions^[3]. Adults €29.50, Children (6-15yo) €14.50, Families (2A+2C) €64.00

Brief History of Cave

1864 discovered by a mountaineer from Bayrischzell.

1882 explored by Prof. Dr. Max Kleiber.

1883 report published by Baumann.

1886 report published by Ratzel.

1921 opened to the public, electric light.

1922 first survey by the newly founded Gesellschaft für Höhlenkunde from München (Society of Speleology from Munich).

1962 renovation of paths and electric light, completion of artificial entrance tunnel.

1994 new cave passages discovered by the Verein für Höhlenkunde München (Association for caving Munich).

2009/2010 the first 3D model of the cave system was created.

2009/2010 Additional renovation work used 5m³ concrete, 13 tonnes of gravel for the pathways, 3km of wiring and piping.^[4]

2010 Completed installation of new LED light system and several multimedia stations.



Reproduced from the English info pamphlet "Top 10 Highlights – The Wendelstein" available at [www.wendelsteinbahn.de]

Other Attractions on Wendelstein Mountain

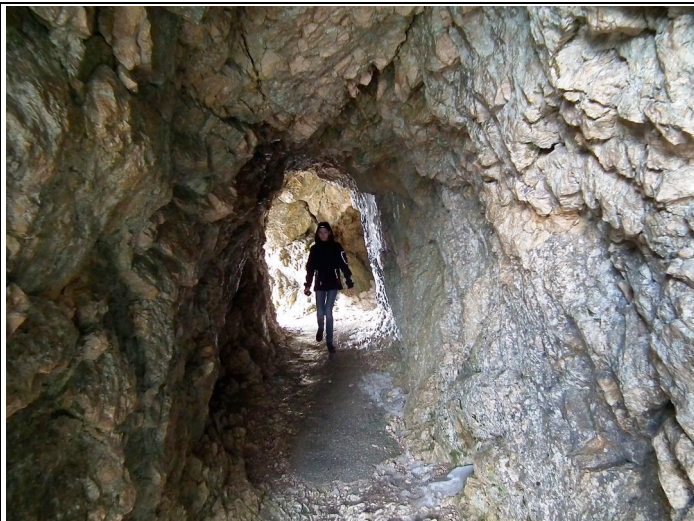
Wendelstein Church just a hundred meters below the summit was dedicated on 20th Aug 1890. It is the highest church in Germany and services are held on summer Sundays. It is worth having a look inside.

Lookout, astronomic observatory and weather station are located at the very top of the mountain. A zig zag foot track leads from the top cable car station to the mountain summit. There is about 150 metre difference in altitude. The walk of approximately one hour round trip, is well worth the effort to take in such a truly spectacular panoramic view.

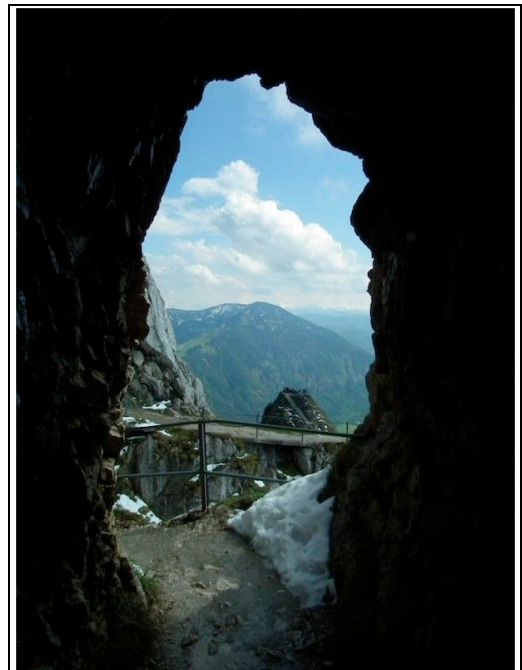
Wendelsteinhaus is a restaurant located at the top cable car station. It offers meals, snacks and drinks with a fantastic view, indoors or out, full service or self-service.

References

- [1] <http://de.wikipedia.org/wiki/Wendelsteinhöhle> - using Google - German to English Translator
- [2] Show Caves of Germany www.showcaves.com/english/de/showcaves/Wendelstein.html
- [3] www.wendelsteinbahn.de/bergbahnen/international/englisch.php
- [4] www.tropfstein.de/hunterwelten/5wendelstein.htm
- [5] www.unterwelten.com/wendelsteinhoele/beleuchtung.html (LEDS)
- [6] Cave Map courtesy of www.wendelsteinbahn.de/pdf/bergbahnen/wendelstein_hoehlen_plan.pdf



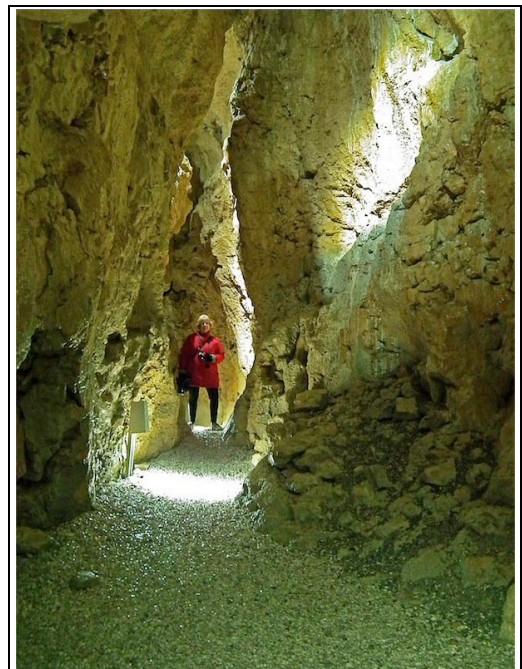
Track to Observatory goes through excavated tunnel.
Photo: Garry K. Smith



View out of tunnel on path to Observatory.
Photo: Garry K. Smith



Entrance tunnel to Wendelstein Höhle.
Photo: Garry K. Smith



Passage inside Wendelstein Höhle.
Photo: Garry K. Smith