

New cave in ICE Tunnel in Thuringia

A big and beautiful cave was discovered on March 30th, when digging a tunnel for the ICE railway line (from Erfurt to Nürnberg). First it was only a small hole, they tried to fill it up with 500 m³ concrete - no chance. When digging further they found a big cave. Cavers of the Thuringian caving club could visit the very beautiful cave (many speleothemes, 3 lakes) and they recognised, that the natural drainage was blocked by the concrete so that the water level of the lakes was rising by 12 cm per hour. After 3 hours the cavers had to leave the cave and the entrance was closed with concrete forever. So it was not possible to complete the documentation of the whole cave.

The explored part of the cave is positioned on the west side of the tunnel. It has developed along the south fault of the Thuringian Forest in triassic limestone. The cave crosses the tunnel from northwest to southeast. Only the northwest part could be investigated at this time. A streamlet flows from the western end with about 10 to 20 liters water per second through the cave. The cave is on average 10 to 15 meters high and between 2 and 7 meters wide. At the most westerly point we stopped exploring at an area of breakdown, but there is a chance it is passable. About 100 meters prior the breakdown a side passage enters. The ancillary passage is heading southwest. It is the finest part of the cave and exploration was stopped at a low airspace bedding plane. The water here flows, in the form of a streamlet, towards the main cave.

At present, the eastern part of the cave will be opened by digging the tunnel.

Since yesterday we have contact with the Bahn AG through the Thuringian geological office, which is part of the ministry of agriculture, nature conservancy and environment.

The processes around the discovering of this cave show that all the existing mechanisms have not worked properly. Every office first declared no competences. There are too many gaps in the law and between different laws and regulations. Cavers from other European countries have all experienced the same situation. So European cavers require change at a European level.

The conclusions described in the German Speleological Federation's paper. „For construction projects in karst areas“ („Zur Entdeckungen von neuen Höhlen bei Bauvorhaben“)

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For Construction Projects in Karst Areas

It is to be expected that caves and other karst phenomena, which were unknown beforehand, will be discovered during all construction projects in karst areas. Up to now, no exploration and documentation of these objects is taking place, either because they are not reported, access is not allowed or only for too short a time as was just now the case in the railway tunnel "Bließberg" in Thuringia, Germany.

Caves and their flowing water bodies are no static systems, they change due to outside influences and sometimes with serious consequences.

In Switzerland the level of Lake Cauma near Flims lowered after tunnelling work. Only then was the Swiss Institute of Speleology and Karstology called in. The construction of the ICE railway line Nürnberg-München was delayed by 2 years because many large-scale and water-bearing caves were intersected during the tunnel boring. Speleological surveying and expertise were not put to use at these objects, notwithstanding any warning from the speleology community, to this day! During the construction of an avalanche barrier in Hallstadt, Austria the main resurgence of one of the largest cave systems in Austria was obstructed. However, only until the next heavy rain, when the spring burst open once again.

As a consequence of climate change an increased number flood events is to be expected. As a result, one has to give special focus to underground waterways in karst areas and use all available information. Already in the course of the project planning for building projects it is known, if karst occurs at a given site.

It is indispensable for the planer to acquaint him or herself on site with speleologists about the state of research of known caves, main direction of passages, fault-zones, drainage areas, etc., in order to include these data in the project planning. Otherwise one risks additional costs, delays in construction or the whole project may be endangered.

If during a building project a cave is intersected, only speleology and speleologists can provide reliable data about location, dimension, ground water aquifer, cave content (sediments, findings, etc.), fauna etc. Only with the help of these data is an assessment of stability or a hydrological assessment possible. Additionally, conformance in terms of impact regulation under nature protection laws can be checked.

Furthermore it is essential to have a permanent entrance, in order to measure changes and where appropriate adopt protective measures.

For this reason the German Speleological Federation calls for legal regulations for

- **Co-operation with speleology in the building projects in karst areas**
- **Exact documentation of intersected caves and karst phenomena**
- **Accessibility to these objects in order to judge potential endangerments on a long-term basis**