



GEO PARK[®]
Harz . Braunschweiger Land . Ostfalen

Landmark 5

Herzberg Castle



assisted by **UNESCO**

Harz



Networks of the Geoparks



The **Global Geopark Network** is a worldwide association of various Geoparks, all of which pursue common goals under the auspices of the UNESCO.



European Geoparks



A **National Geopark** is a clearly defined region, which conveys both geological history as well as the development of a cultural landscape. In addition, the institutions responsible for the Geoparks are actively involved in the protection of its geological heritage.



The **Geopark Harz · Braunschweiger Land · Ostfalen** was founded in 2002. Its geographical position in Europe as well as the location of the individual landmark regions are depicted in the map above.

1

Herzberg Castle on the Harz

The Herzberg Castle, ancestral seat of the Welf dynasty, is located on the elongated castle hill, 279 meters above NHN and is visible over a great distance. After a fire which destroyed the original building in 1510, the castle was reconstructed as a Renaissance half-timbered house. Today it is the largest castle in Lower Saxony built as a half-timbered construction.

The museum informs about the history of the castle and its rulers. The exhibition devoted to forestry and mining offers insights into the historical development of these economic sectors characteristic of the Harz.

Along the steep slopes of the castle hill, the "Hauptdolomit" (principle dolomite) of the Zechstein belt of the Southern Harz region is exposed. Cliffs and inclines in this locality attest to the fact that waters from the river Sieber are seeping away beneath the castle hill and the Nüllberg and intensively eroding the subsurface



At the face of the castle



Duke Georg Wilhelm's coat of arms

dolomite and gypsum. Weathered fluvial gravels composed of Harz rocks deposited on the castle hill indicate that the river Sieber flowed above this site at the beginning of the ice age period. Since that time, the river has been extensively eroding the valley. 350 meters southeast from the castle, the swamp of the "Ochsenpfuhl" is hidden in a slight depression. Here, the groundwater rises up and the water level is already situated several meters below the Sieber river bed, demonstrating that waters from the Sieber migrate within the gravel beds south-eastward starting from the river bed. These waters reappear in the "Rhume" spring. Similarly, the Jues Lake, located in the city centre, is a further leaching phenomenon. It is a large double sinkhole which collapsed after the end of the last ice age period. This unusual behaviour of the groundwater marks the geological boundary between the entire western and southern margins of the Harz.

2

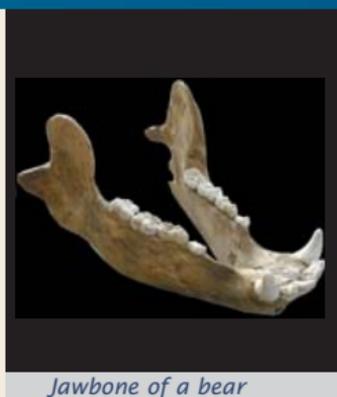
Ice Age and the Palaeolithic Period
“Unicorn Cave” near Scharzfeld

This natural cave, which developed in the Zechstein dolomite, is located north of Scharzfeld and was formed at the end of the Tertiary about 3 million years ago. In warm, humid climates, rain waters enriched with carbonic acid migrated from the forest floor into the fissure system of the dolomite rock. As a result, a giant cavern was formed over the course of hundreds of thousands of years. During the following ice age, the entire cave was slowly and almost completely filled with 15 to 30 meter thick deposits of loam, clay, dolomite sand and washed-in river gravels. Beneath the main path of the cave as it is to be experienced today, precious remains from the entire ice age have been conserved. Large caverns and domes are connected by shallower tunnels. The “Einhornhöhle” (Unicorn Cave) contains 600 meters of open tunnels and is the largest cave in the western Harz accessible to visitors.

As a rich occurrence of a medicinal remedy known as



In the Unicorn Cave



Jawbone of a bear

“Einhorn” (unicorn flour), the cave became famous across Europe. Since the end of the 17th century, it is known that this bone-meal actually consists of the fossil remains of cave bears and other large mammals. In the year 1985, Palaeolithic stone tools were discovered in the cave. Findings from the latest excavation indicate that the cave was settled by Neanderthals more than 100,000 years ago. An entrance area of the cave, today buried, served as their workshop up until the youngest phase of the cold period. Bone remains of about 70 animal species have also been found. What further knowledge may still be waiting to be recovered from this ice age and Palaeolithic geological archive?

Located opposite to the “Einhornhöhle” are the picturesque ruins of the Scharzfelds Castle, destroyed in 1761. The castle was nestled in a formidable setting of Zechstein dolomite cliffs. Three “experience-nature-live” hiking circuits, trails provided with at least 60 information sites, connect the “Einhornhöhle” with the “Steinkirche” cliff and the ruins of Scharzfelds Castle.

3

Zechstein

Tropical Reefs in the Southern Harz

We reach the “Westersteine” by following the southern route of Karst Hiking Trail coming from the Rhume Spring, the well-head and watershed for the river systems of the Elbe and the Weser.

When the Harz region was flooded by the Zechstein seas 258 million years ago, the Eichsfeld swell was formed, first as a peninsula and then as an elongated shoal area with numerous bays and islands. Shallow water environments contributed to the growth of tropical reefs. The geographic position of the southern Harz at that time was warm and in the same latitude as Cairo today. The Atlantic Ocean had not yet evolved, America was located west of the north European Zechstein seas, whose waters rapidly made their way forward from the northwest. Dry climates, clear waters and a high concentration of dissolved materials supported the growth of colonial organisms. Their bio-constructions formed reefs of organic limestone



Dolomit



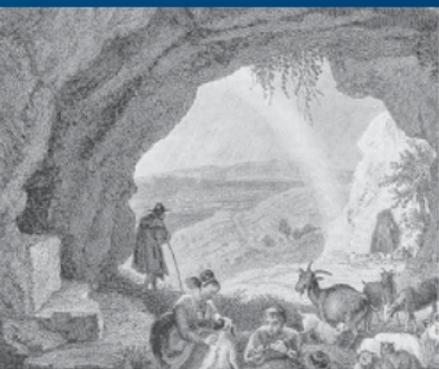
Bartolfelder Westerstein

reaching from the floor of the sea to the water surface. Many of these reefs from the southern Harz have proved resistant to later weathering because they are constituted of hard and massive rock bodies without bedding. As a unique site in Europe, the “Westersteine” represent a well-exposed reef entirely comprised of algal mats (stromatolites). By Bartolfelde the breakers coming from the northwest eroded the older greywacke cliffs and rock debris was deposited on the shallow sea floor. Reef-building bryozoans settled on these cliffs in shallow waters. As if in a snapshot of the history of the earth, this process can be seen in the former quarry north of Bartolfelde. To the left, visible in the rubble, we can recognize the blocks of South Harz greywacke (Suedharzgrauwacke) torn down by the breakers. Both of the “Westersteine” – Barbiser in the West and Bartolfelder in the East – as well as the former quarry are under protection as natural monuments. The “Westersteine” are both covered by opulent forests of woodruff beech trees.

4 Steinkirche (Stone Church) of Scharzfeld

Like the “Einhornhöhle”, the “Steinkirche” is a fissure cave in Zechstein dolomite. The entrance of the cave on the western slope of the Steinberg, high above the village of Scharzfeld, is visible from a great distance. Excavations initiated in 1925 by the former provincial museum of Hannover yielded remains of a 15,000 year old resting place for reindeer hunters from the Weichsel ice age. Around the fireplace, tools as well as bones of reindeer, arctic hares and other animals from the ice age have been found. From the mountain heights, the reindeer hunters could observe the animal herds in the steppe land below.

About 1,000 years ago, the natural cave was converted into a Christian church through masonry alterations in the inner cave area, the shaft fissure and the entry portal. A stoup and pulpit were incorporated into this area. Beam abutments and bricks were found,



Old engraving of the Stone Church



Stone Church today

indicating the development of a forecourt. From the 9th and 10th through the 15th century, the forecourt also served as a graveyard for more than 100 people. In 1937, a female skeleton was discovered in a stone coffin partially worked into the dolomite rock.

The bell from the year 1433 of the Stone Church still rings today in the present Neo-Gothic village church. The crest of the Steinberg over the Oder Valley demonstrates with its remnants of walls and ditches evidence of medieval fortifications. Here the Easter bonfire is still lit every year, linking the saga with events of the Christianization of the heathen Saxons. It is also worth a walk to the nearby Scharzfelder Schulberg to visit the half caves, which contain middle stone-age findings.

5

The largest Karst Spring in Northern Germany Rhume Spring and the Pöhlde Basin

The village of Pöhlde is located at the centre of the basin of Pöhlde, named after the settlement. The basin is a wide depression formed by subterranean erosion of the underlying soluble gypsum rocks. The central portion of the basin of Pöhlde is covered by thick gravel beds from the ice age. Here, the river Oder loses a considerable amount of water, which is drained into the subsurface Zechstein rocks and then flows within deep karst caves. The seepage of the Oder and the river Sieber flowing north of the Oder are situated 40 to 70 meters above the discharge of the Rhume Spring. Rows of sink holes attest to the subterranean course of karst waters down to the spring. The average daily discharge of the spring is 21,000 cubic meters, or 2.5 cubic meters per second. At high watermark, the discharge can reach up to 5.5 cubic meters per second. The water temperature is constantly 8 degrees Celsius.



Rhume Spring

Springs of this sort have always exercised a particular attraction and for thousands of years have been regarded by man as supernatural sites. The Rhume Spring is also an old cult site.

Today, the water works "Rhumspringe" supply more than 50,000 inhabitants of the northern "Eichsfeld" with potable water from this spring. On a hike around Pöhlde one can discover traces of the ice age and of subterranean waters. Gravel pits near Pöhlde, Herzberg and Hattorf contain vast masses of rounded rubble which was transported from the Harz valley into the flat foreland beneath the ground frost during the ice age.

Large sink holes indicate the subterranean formation of caves. The "Wiedensee" lake is one of these sink holes. Others can be found in the forest of Pöhlde and at the Rotenberg. All these sites are accessible on the Karst Hiking Trail.



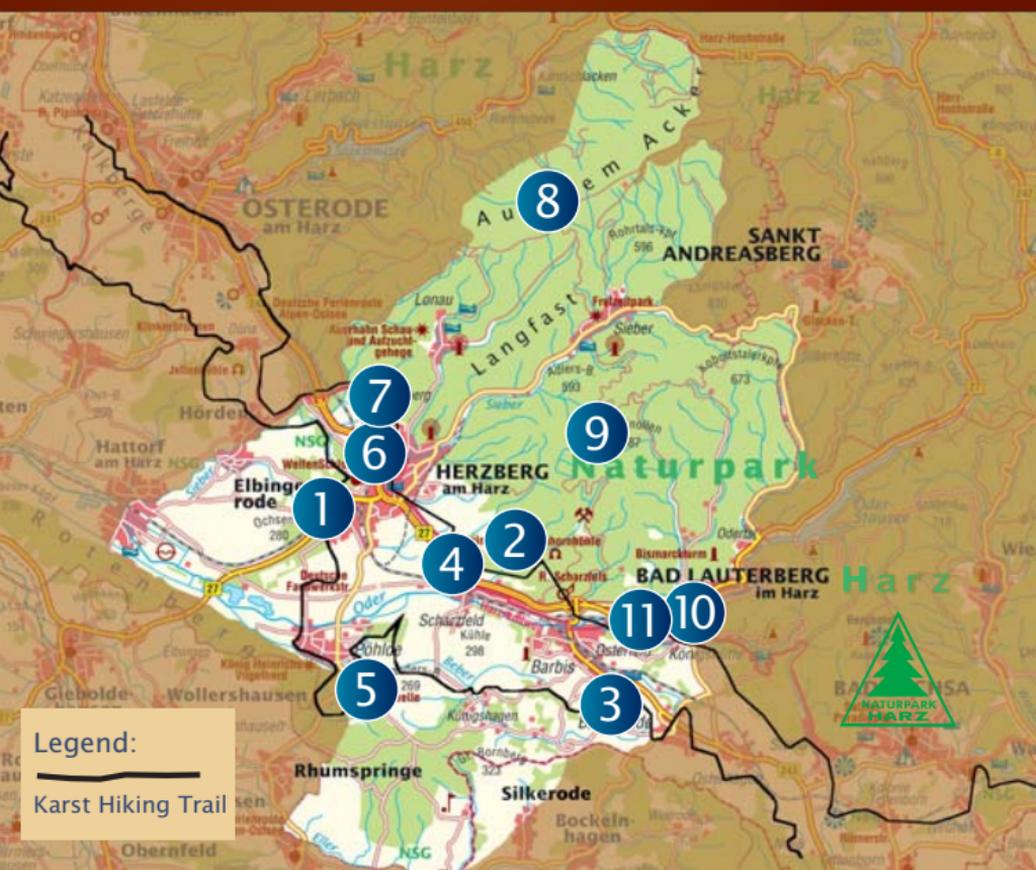
Glossary

Landmarks are widely visible or particularly well-known ground points or places serving for a first orientation in one of the largest Geoparks of Europe giving its name to one of its part areas. Up to this point the landmarks and their surrounding area have been described so far.

Geopoints are points of special interest. The geologic history and the development of the natural and cultural landscape can be seen and conveyed on them. Geopoints of the area of one landmark are continuously numbered and can be connected to individual Geo-Routes. Geopoint 1 is always the place of the landmark.

The map below will aid you with planning your own personal **Geo-Route** in the region of Landmark 5. The museum in the castle exhibits collections concerning the history of the castle and the Welfen. Amongst the most important items are a facsimile of the Evangical of HEINRICH DES LÖWENS (HENRY THE LION). There are additional exhibitions on the history of the city, on its mill sites and on organ construction. The exhibit of the Lower Saxony State Forest Service is entitled "From the Primal Forest to Forests Still Close to Nature."

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www.harzregion.de



6

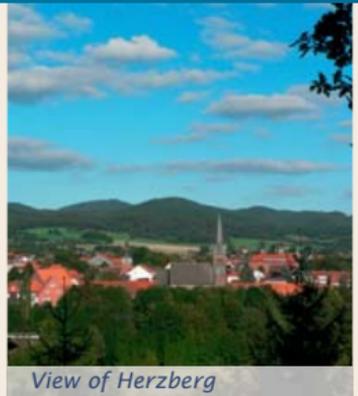
Permian and Ice Age

Earth History near Herzberg

As the hospital was being constructed, problematic conditions of the soil for construction manifested themselves. They also offered insights into the course of the earth's history. A rhyolite dyke (porphyry dyke) namely a volcanic chimney, is visible in the embankment at the back of the parking area. During Rotliegend times (about 270 million years ago), a steep 25 meter deep and up to 80 meter wide ravine was eroded into greywacke rocks. Later, invasive marine waters of the Zechstein seas completely filled up the ravine with sediments, forming the approximately 40 cm thick "Kupferschiefer" (Zechstein copper shale) at its base. The remaining depression was finally filled up with marine calcareous biota from the Zechstein seas, today the Zechstein limestone. Along the dipping slopes of the sea floors, the soft, calcareous mud began to glide and was reformed into folds upon encountering obstacles such as the rhyolite dyke.



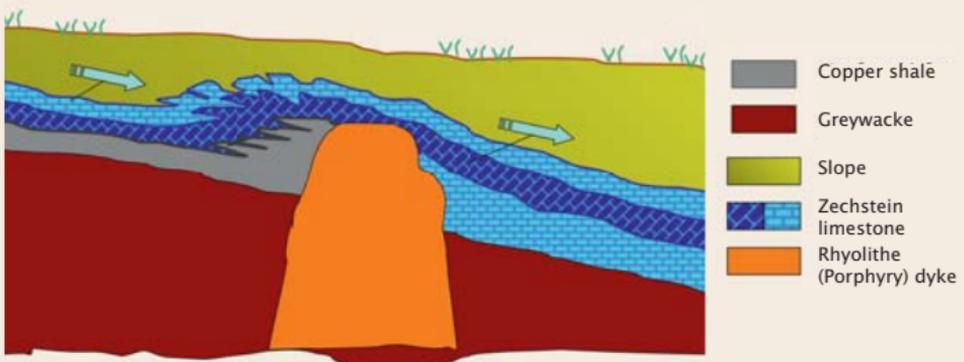
Outcrop near Herzberg



View of Herzberg

During the early ice age period, a valley was eroded into the limestone by the Lonau River and was subsequently filled up with sand and gravel. Little caves were formed by the groundwater within the limestone, in which soft manganese ores then came about. In order to assure a stable foundation soil for the hospital, 230 concrete pillars had to be driven up to 30 meters deep into the earth with its varying degrees of stability.

Exposure behind the Herzberg Clinic – Scenes from the ocean floor in the early Zechstein Period. Sliding slopes of soft Kalkschlamm deposits



7

The Only Natural Waterfall of the Western Harz Waterfall of Lonau near Herzberg

Below the unique natural waterfall of the western Harz, the rivers Lonau and Sieber meet. The smaller Lonau flows in hard greywacke, slowly eroding the bed rock. The more abundant waters of the Sieber have formed a wide valley, eroding the soft and soluble Zechstein beds directly at the confluence of both rivers. Between the Harz mountain region and the Harz foreland, the Sieber valley was eroded much more rapidly. As a result, the Lonau valley is higher up on the slope. The Lonau waters rush 10 meters deep into the Sieber valley – as a waterfall. The waterfall gorge is located in soft “Kulmtonschiefer” (Lower Carboniferous slate), a rock not resistant to erosion. Before the beginning of the first ice age period (formation of the upper terrace) 500,000 years ago, the Lonau River flowed into the Sieber River via Mühlenberg and Hörden. Later, the present lower course of the river and the waterfall developed.



Waterfall



Hanskühnenburg-Rock

8

Lower Carboniferous “Hanskühnenburg” near Lonau

It is possible to hike from Lonau, Sieber and Riefensbeek-Kamschlacken to the rock formations of the Hanskühnenburg, comprised of Acker-Bruchberg quartzite. From the tower of the “National Park Restaurant Hanskühnenburg” one has a scenic panorama: from the Brocken to the southern Harz foreland and to the Thuringia forest. The Acker-Bruchberg quartzite is highly resistant to weathering and erosion. The Acker-Bruchberg range has become morphologically isolated as a ridge. The group of cliffs named “Hanskühnenburg” are composed of this quartzite. The rocks consist almost completely of quartz crystals and give the impression of being almost structureless. A magnifying glass shows billions of tiny quartz grains that compose the quartzite. The original rock was sand whose bedding is no longer visible. Earthquakes and submarine gliding transported the sand into a deep sea trench close to the equator about 340 million years ago.

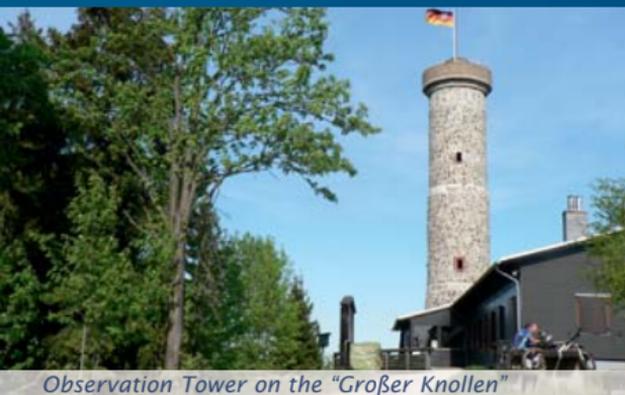


9

Volcanism of Rotliegend Age

The Porphyry Dome “Großer Knollen”

After the folding and uplift of the Harz from the marine environment during the late Carboniferous, volcanism began in the lower Permian, the Rotliegend times. Fissures occurring in the new greywacke mountains were filled up with molten magma which finally reached the surface. The magma solidified as porphyry, which today is a pale violet to pink coloured rock. The “Großer” and “Kleiner Knollen” are such porphyry volcanoes. Located northeast of Herzberg, they are popular hiking destinations. On the way to the “Knollenbaude” (687 meters above NHN), today under public management, other porphyry dykes can be discovered. Their areal extrusions have already once again been eroded in recent times. In clear weather, the view extends from the “Großer Knollen” to the “Großer Inselsberg” in the Thuringia forest.



Observation Tower on the “Großer Knollen”



View into the Mining Tunnel

10

Visitors' Mine

“Scholmzeche” near Bad Lauterberg

This show mine opened in 1989 and is located in the spa park of Bad Lauterberg on the river Oder and consists of an interesting combination of former mines: the “Scholmzeche” (1837), an ironstone exploration mine and a portion of the “Aufrichtigkeiter Tiefen Stollen” (1710). The circular trail through the mine, 250 meters long, begins at the “Wilhelmina” bridge. It shows miners' work sites, variations of tunnel construction, ores and rock types and mining tools. The path leads into the historical drainage audit of the “Aufrichtigkeit” mine with an impressive ore deposit of copper and barite with surrounding rock of Devonian greywacke and slate. A water-driven functional model of a water wheel with driving rod and water lift demonstrates the historical rod assembly for the management of water. At Bad Lauterberg, heavy spar was excavated until 2007.

11 “Königshütte” at Bad Lauterberg

The technological monument „Königshütte“ can be reached from the Bahnhofstraße at Bad Lauterberg via Schanzenbrücke and Hüttenstraße. Parking space is available on the grounds of the plant. The “Königshütte” plant was opened in 1733, when GEORG II. AUGUST (1683-1760) was Elector of Hannover and King of Great Britain and came into being in the course of mercantilist economic policies following the construction of the Rothehütte (today Königshütte) in 1707 and the iron metallurgical plant of Uslar in 1715.

Before operations were finally closed down in 2001, the Association “Förderkreis Königshütte Bad Lauterberg e. V.” (founded in 1983) was able in 1997 to open the “Südharzer Eisenhüttenmuseum” in the former analytical laboratory of the mine. In its two



rooms, the museum presents interesting insights into the basics of iron metallurgy, the function of the “Königshütte” and the highly varied range of products produced there. The exhibition is focused primarily on presentation of the technique of artificial iron casting.

The former plant assemblage as it can be visited by the general public, with or without a guided tour, can be experienced in its two phases of construction. In the first phase (1733-1740), the administration building and residences as well as the restaurant were erected. The major part of the buildings, however, can be attributed to the second period (1820-1840). Among these, the former iron warehouse, built in neoclassical style, is worth mentioning because of the four cast iron columns through which it is characterized.



The Karst Hiking Trail

As a trail of high quality, certified in “Germany for Hikers”, the Karst Hiking Trail is a special attraction of the Harz Mountains. Hikers take pleasure in the ever-changing landscape, the secret of the Karst Hiking Trail: a constant alternation between detailed observations in deciduous forests flooded with daylight and magnificent views into the distance of the open landscapes of the South Harz, with portions of the trail through valleys, then across elevations and with longer trajectories for wanderers looking for an truly invigorating hike.

In the South Harz, an area rich in natural gypsum, there has evolved over tens of thousands of years a landscape filled with caves, rock falls and dolines, karst springs, vanishing and seeping rivers and white cliffs. This highly variegated terrain has produced a correspondingly rich assortment of flora and fauna. These geological phenomena caused by the solvent activity of water are strung



On the Karst Hiking Trail



Landscape on the Karst Hiking Trail

out like a row of pearls from Förste (Landmark **11**) in the west to Pölsfeld in the east (Landmark **12**). The 235 km long Karst Hiking Trail provides access to this unique gypsum karst landscape in the South Harz. From Förste to Ellrich there are even two parallel routes! Approximately 200 information panels offer explanations of geological features and the landscape, conservation and landscape protection measures accompanied by a history of the groundwater along with accounts of settlements and industrial developments. The trail explains countless cultural monuments, such as castles, fortress ruins and churches along with monuments of nature. It traverses numerous wild life reserves, pockets of stillness.

The “Association for the Karst Hiking Trail” looks after the trail and offers up to 40 guided tours a year on Sundays. So that you will not go astray, follow the signs with the red cross-bar on a white background with a white “K” or load the hiking trail as a GPS trajectory on your smartphone or navigation device.





Selected Points of Information

Restaurants and Accommodations



A Hotel „Englischer Hof“
Herzberg am Harz
www.englischer-hof.de
☎ 0049 5521 - 89690

B Landhaus Schulze
Herzberg am Harz
www.landhaus-schulze.de
☎ 0049 5521 - 89940

C Wirtshaus Harzklaus
Herzberg am Harz
www.wirtshaus-harzklaus.de
☎ 0049 5521 - 996212

D Panoramic Hotel
Bad Lauterberg
www.panoramic-hotel.de
☎ 0049 5524 - 9620

E Parkhotel Weber-Müller
Bad Lauterberg
www.harz-parkhotel.de
☎ 0049 5524 - 9600

F Haus Einhorn Scharzfeld
Herzberg am Harz
www.wanderbaude.de
☎ 0049 5521 - 997559



REGIONALVERBAND HARZ E.V.

The Regional Association Harz is a non-profit association of the following counties: Goslar, Harz, Mansfeld-Südharz, Nordhausen and Osterode am Harz. It promotes the protection of the natural environment as well as cultural life in the region. It is supported by a network of over one hundred contributing members. Its goals are realized in part within the administrative context of the Nature Parks of the Harz Region. As a corporate member of the Geopark Harz · Braunschweiger Land · Ostfalen GbR, founded in 2004, the Regional Association is responsible for the southern portion of the region. Its corporate partner, the association FEMO in Königslutter, is responsible for the northern portion. The Geopark Harz · Braunschweiger Land · Ostfalen is a member of the European and Global Geopark Networks under the auspices of the UNESCO.

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