www.thueringer-geopark.de

Life

300 million years ago and today

Information Centre
National GeoPark
Thuringia Inselsberg -
Drei Gleichen

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Freistaat Thüringen
Ministerium für Umwelt, Energie und Naturschutz

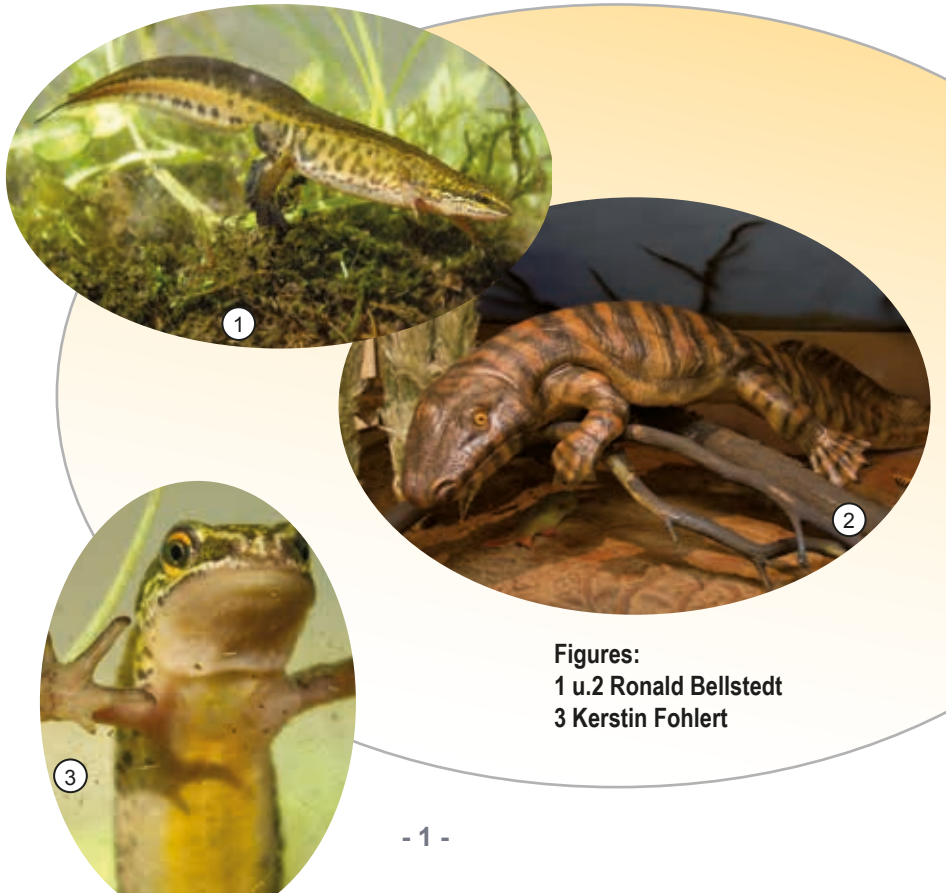
Welcome to "National GeoPark Thuringia Inselsberg - Drei Gleichen“

Information Centre at Marienglashöhle cave near Friedrichroda

„Life 300 million years ago and today"

Visit our GeoPark Exhibition in the attic!

See how landscape and nature have developed over time and find out about the nature activities, such as the GeoRoutes available in the GeoPark.



Figures:
1 u.2 Ronald Bellstedt
3 Kerstin Fohlert

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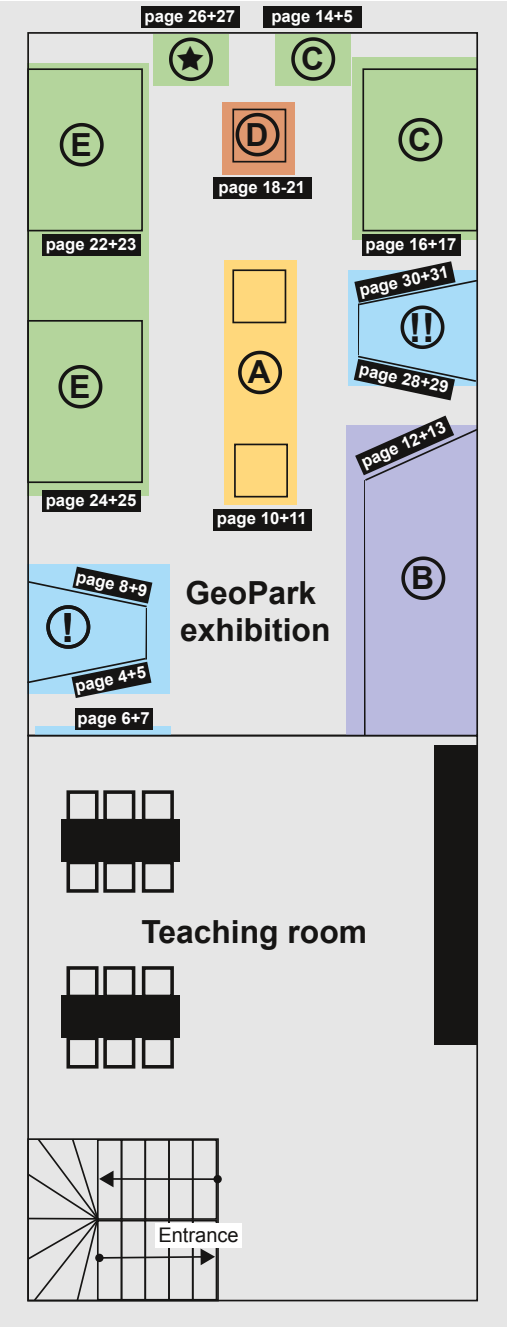
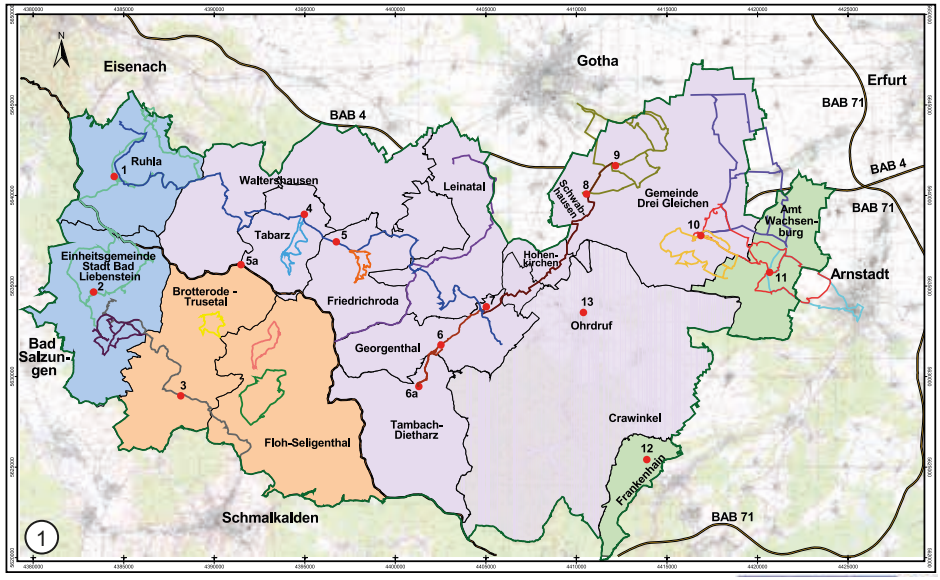
Exhibition map



Welcome to "National GeoPark Thuringia Inselsberg - Drei Gleichen“

The National GeoPark Thuringia Inselsberg – Drei Gleichen covers an area of around 700 km² and lies in the heart of the federal state of Thuringia. On the one hand, the name of the GeoPark refers to the “Grosser Inselsberg“, a prominent viewpoint and at 916.5 m, the highest hill in the Geopark and the western Thuringian Forest. On the other hand, it also includes the name of the three characteristic castle hills, the so-called “Drei Gleichen“, in the northeastern foreland of the Thuringian Forest.

Get GeoActive: explore one of the 17 thematic GeoRoutes – on your own with the relevant flyer (”GeoRoute-Guide”) or with a certified GeoPark-Guide.



Routen von WESTEN nach OSTEN (GeoTrails West to East)

- GeoRoute 9: Wanderung über die tropische Ruhlaer Insel
- GeoRoute 16: Trusetaler Bergbaupfad
- GeoRoute 10: Naturlehrpfad Bad Liebenstein
- GeoRoute 12: Brotteröder Kindertour
- GeoRoute 1: Große Haderholzroute
- GeoRoute 14: Kleinschmalkalder Vulkansteig
- GeoRoute 11: Thüringer Rohstoffpfad am Thüringenweg
- GeoRoute 8: Tabarzer Vulkansteig
- GeoRoute 7: Friedrichrodaer Bergbaupfad
- GeoRoute 13: Flusstour Leina
- GeoRoute 6: Saurier-Erlebnispfad Georgenthal
- GeoRoute 15: Flusstour Apfelstädt
- GeoRoute 5: Seebergroute
- GeoRoute 4: Apfelstädt-Jacobsweg-Route
- GeoRoute 3: Burgenroute
- GeoRoute 2: Panoramaroute
- GeoRoute 17: Geo- und Genussweg "Vom Bier zur Bratwurst"

- Rennsteig
- Autobahn
- Ilm-Kreis
- Landkreis Gotha
- Landkreis Schmalkalden-Meiningen
- Wartburgkreis
- Umgrenzung GeoPark

GeoInfozentren (Geo-Infocenters)

1 Ruhla: Naturpark- und Touristinformation
2 Bad Liebenstein: Naturparkinformation am Schloss und Park Altenstein
3 Trusetal: Besucherbergwerk "Grube Hühn"
4 Tabarz: KuKuNa/Touristinformation
5 Friedrichroda: Marienglashöhle
5a Aussichtsturm am Inselsberg (in Bearbeitung)
6 Internationale Ursaurier-Fundstätte Bromacker und Erlebnismuseum Lohmühle
6a Ursaurier-Erlebnisausstellung Tambach-Dietharz (in Bearbeitung)
7 Georgenthal: Bürgerhaus "Thüringer Wald"/Touristinformation
8 Schwabhausen: Steinpark am Langhaus
9 Günthersleben-Wechmar: Infozentrum für Regionalgeschichte und Geologie
10 Gemeinde Drei Gleichen: Kulturscheune Mühlberg
11 Amt Wachsenburg: HOLTZHAUS in Holzhausen
12 Frankenhain: Heimatstube
13 GeoInformationszentrum Schloss Ehrenstein Ohrdruf (in Bearbeitung)

Fig. 1 Geo-touristic overview map with all GeoRoutes and GeoInfocentres (B. Fuhrmann)

Figures:

2 Station along the Geo- and Pleasure Trail “From Beer to Bratwurst “ (P. Rohde) - GeoRoute 17
3 Geotope along the Friedrichroda Mining Trail (K. Fohlert) - GeoRoute 7
4 The Inselsberg, panoramic view of the highest hill in the Geopark (S. Brauner)
5 Panoramic view of the Drei Gleichen Castles (K. Fohlert)
6 Aerial Photograph of Castle Gleichen - Georoute 5
7 Castle Mühlburg (K. Fohlert) - GeoRoute 3
8 Aerial Photograph of the castle Wachsenburg - GeoRoute 2

GeoActive in the GeoPark

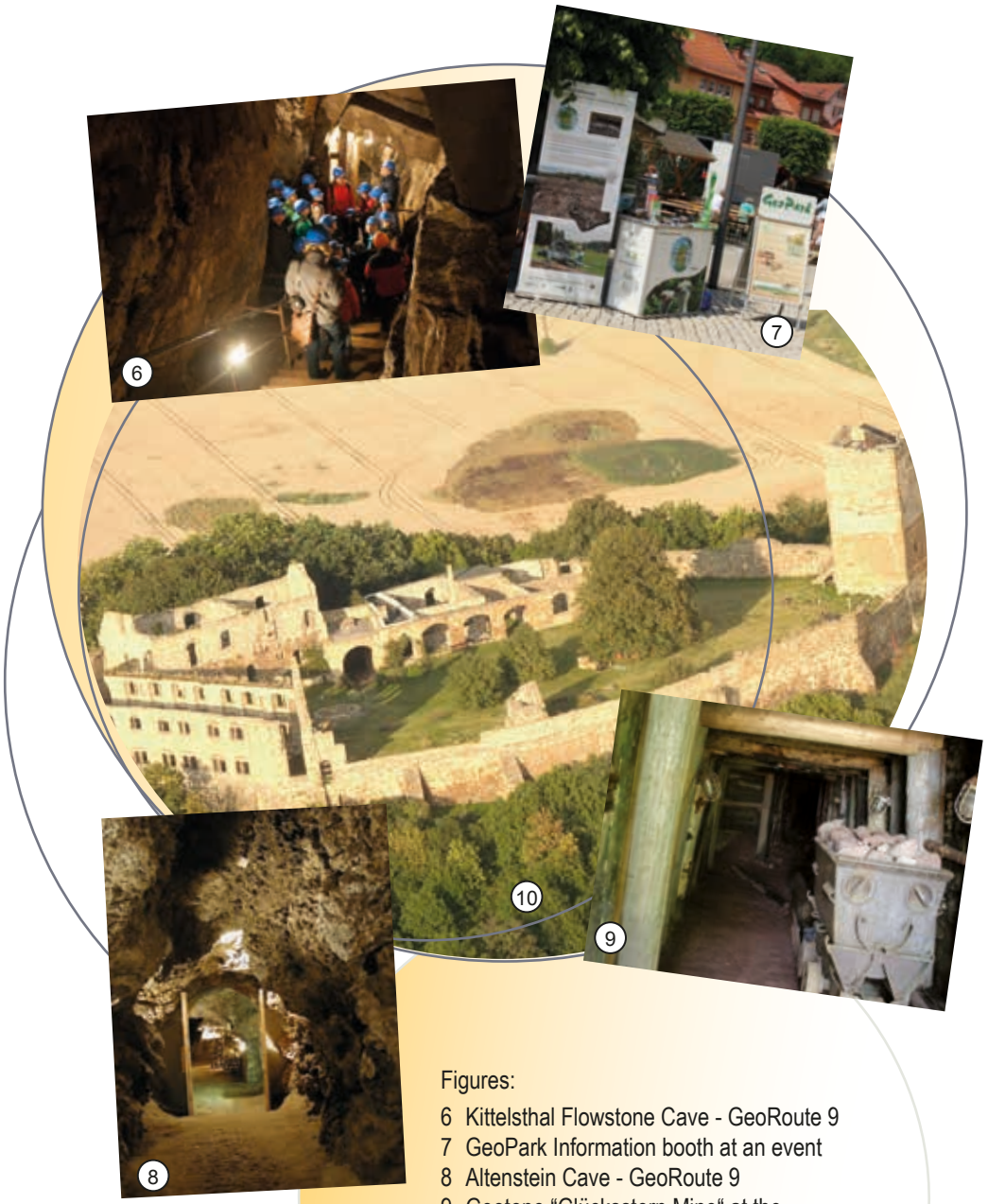
Get GeoActive:

Explore our GeoRoutes – Either on your own with the relevant brochure (Geo-Route-Guide) or together with a certified GeoPark-Guide.

Visit our tourist caves and mines as well as our presentations covering topics from geology to mining history.

Figures:

1 GeoRoute leaflets
2 The red kite *Milvus milvus*
3 The spring pheasant's eye in Drei Gleichen Area
4 Guided tour in the GeoPark - GeoRoute 5
5 GeoInfocentre Kulturscheune Mühlberg with exhibition “Thuringia 230 Million Years ago“ - GeoRoute 3



Figures:

6 Kittelsthal Flowstone Cave - GeoRoute 9
7 GeoPark Information booth at an event
8 Altenstein Cave - GeoRoute 9
9 Geotope “Glücksstern Mine“ at the Gottlob - GeoRoute 7
10 Castle Gleichen - GeoRoute 3

Welcome to Pangaea

The motto of the National GeoPark Thuringia Inselsberg – Drei Gleichen is “Exploring Pangaea“. Pangaea means “the entire world” and was the most recent supercontinent, uniting all present-day continents (see world map).

The vast diversity of rocks in the GeoPark are a result of the development of this supercontinent from the Carboniferous to the beginning of the break-up during the Late Triassic (Keuper). The oldest rocks in the GeoPark are the folded slates and gneisses. Both are the result of the collision of continents that eventually formed Pangaea.

For over 100 million years the landscape changed continually: coal swamps during the Carboniferous, volcanoes during the early to Mid Triassic, reefs and islands in the Zechstein Sea (Late Triassic). This goes to show how exciting the history of the supercontinent Pangaea is.

Fossils, the lithified remains of organisms, bear witness to the process of evolution: from the Tetrapods of the Late Carboniferous and Early Permian to the era when Dinosaurs ruled the world.

Fig. 1
Position of GeoPark

Figures:

1 Map of the supercontinent Pangaea 258 million years ago, during the Late Permian age, showing the location of the GeoParks (map redrawn from Scotese & McKerrow 1999).

2 Simplified geological map of the GeoPark (B. Fuhrmann): the colours represent the age of the rocks, which can be read from the time scale. (the geological data wer made available by the Thuringian State Office of Environment and Geology and are used in accordance with the permit no. Geo 002/09.)

A large area of the GeoPark consists of Early Permian rocks (Rotliegend) (see geological map). They represent a period of about 40 million years.

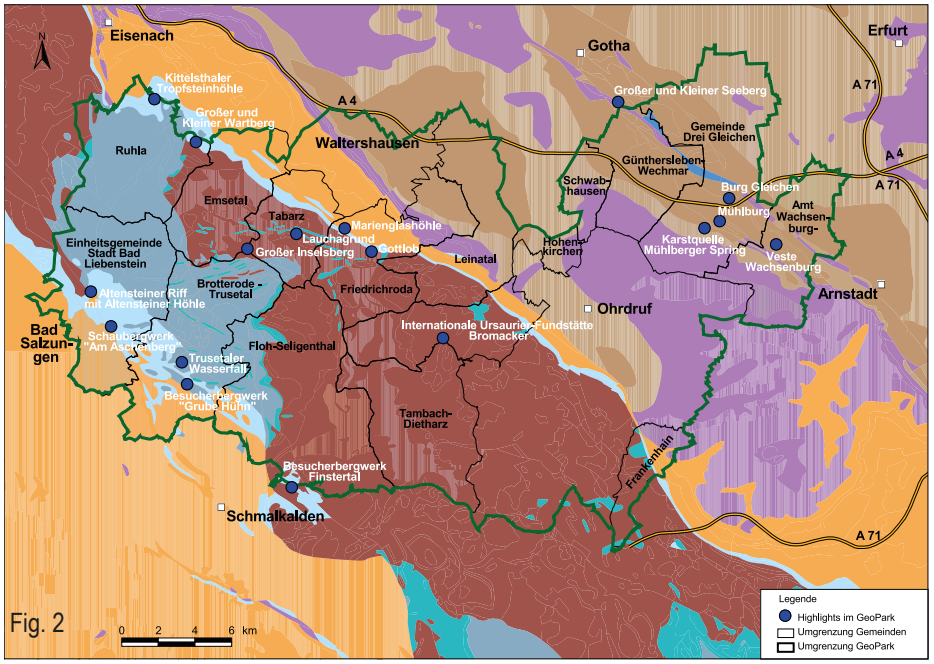


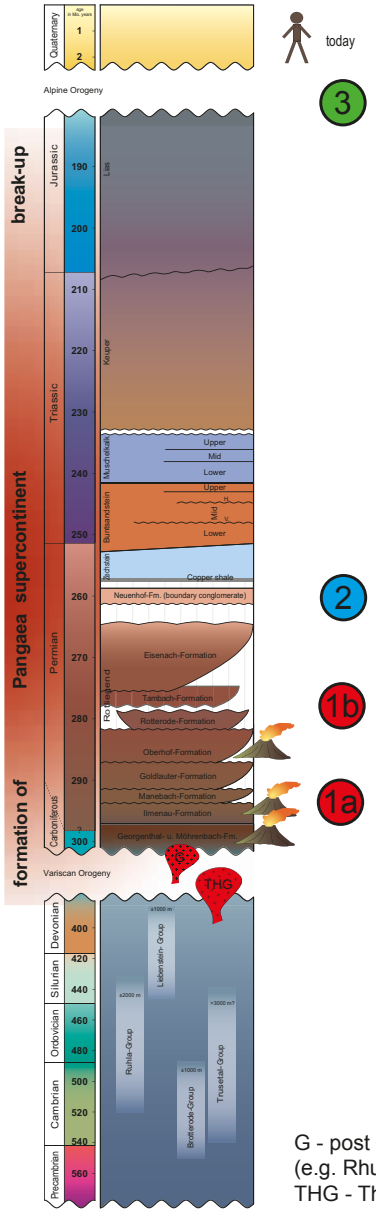
Fig. 2

3 The globally important Tetrapod fossil site at the Bromacker between Georgenthal and Tambach-Dieth also belongs to the Early Permian (Rotliegend) period. Reconstructions of the early reptiles unearthed at the Bromacker site can be seen along GeoRoute 6 - Tetrapod Discovery Trail. The skeletons are on display in the Natural History Museum in Gotha.

You can discover more about the Early Permian landscape on GeoRoute 7 - Tabarz Volcano Trail: What did this region look like 270 million years ago?

Fig. 3

Geological Time Journey through the Inselsberg-Region



The town of Friedrichroda is located on the northern edge of the Thuringian Forest. This mountain range is defined by several tectonic fault zones, along which the rocks of the Thuringian Forest have been uplifted by about 2 to 2.5 km against the Thuringian Basin in the North (see block diagram).

The uplift began around 80 million years ago coinciding with the formation of the Alps and continues until today.

Figure left:

Timetable of the geological development in the National Geopark Inselsberg-Drei Gleichen

Photo: Kerstin Fohlert

G - post orogenic granite
(e.g. Rhula and Trusetal granite)
THG - Thuringian main granite

1a The Early Permian (Rotliegend)

The Inselsberg Region is characterised by the rocks of the Early Permian (Rotliegend). These comprise red sedimentary rocks and magmatic rocks that were formed over a period of about 40 million years. The magmatic rocks date back to a period of intensive volcanic activity around 300 million years ago. The volcanoes mainly produced acidic lava, which cooled to form **Rhyolites**, for example, the rock of the Grosse Inselsberg.

1b The Early Permian (Rotliegend)

The Variscan Mountain Belt was associated with two sedimentary basins separated both in space and in time. The sediments deposited within the mountain range and in the foreland are mostly **red sand and mudstones** as well as **conglomerates**. Many important fossil sites such as the Bromacker (Tetrapod tracks and skeletons), the quarry Tabarz (giant insects) and the Gottlob quarry (fish and amphibian skeletons amongst others) bear witness to this development.

A selection of these fossils are on display in the adjacent showcases.

2 In the Zechstein and Triassic

Younger Late Permian (Zechstein) and Triassic (Bunter Sandstone and Muschelkalk) rocks are found in the northern foreland of the Thuringian Forest.

During the Zechstein, most of Europe was covered by a shallow epicontinental sea. The area was located on the 15th degree of latitude within the tropical zone. The connection to the ocean was interrupted several times during this period. Each time the Zechstein Sea evaporated completely in the hot climate. This created thick deposits of evaporites such as **gypsum, salt and limestone**.

Later, during the Triassic, the **Bunter Sandstones** were deposited followed by **mudstone and limestone** beds during the Muschelkalk period when the sea returned to the area.

3 Minerals and Ore Veins

The vast number of mineral and ore veins were formed during the uplift of the Thuringian Forest from the Jurassic onwards. They are the basis for the longstanding mining tradition around Friedrichroda, which is officially recorded between the 15th and early 20th century.

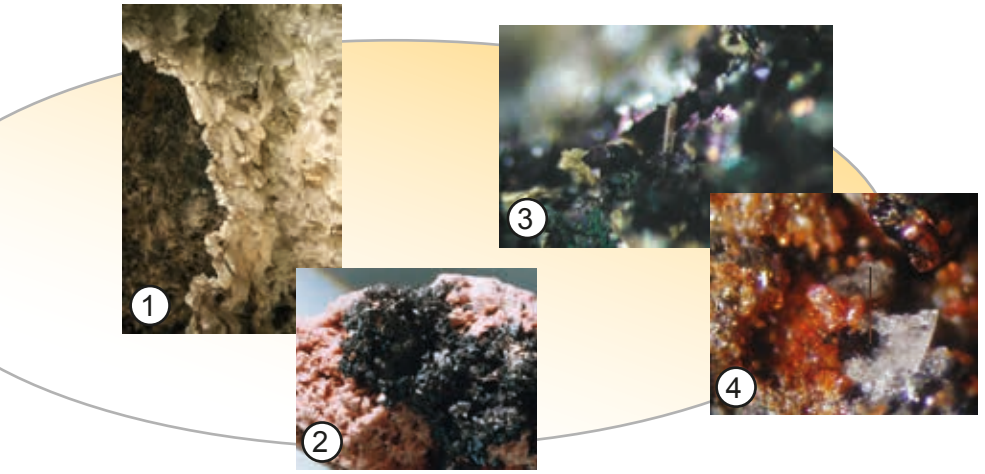
A selection of the most significant minerals and ores are shown in the two adjacent showcases.

Treasures from Friedrichroda

Minerals

Iron ore extraction in the numerous mines of the Gottlob dates back to the 16th century. However, the focus shifted towards manganese ores from the middle of the 19th century onwards. The veins of the Gottlob also contain a rich variety of rare and attractive minerals such as Hausmannite and Goethite. Five minerals were first discovered here and scientifically recorded:

- **Braunite** (Haidinger 1827), opaque manganese mineral
- **Crednerite** (RAMMELSBERG 1847), opaque copper-manganese mineral
- **Vésingnéite** (GUILLEMIN 1955), yellow-green copper-vanadate
- **Gottlobite** (WITZKE et al. 2000), Calcium-magnesium-vanadate (orange brown)
- **La-Wakefieldite** (WITZKE et al. 2007), Lanthanum-vanadate (brownish-violet)



Figures:

1 Large gypsum crystals from the Crystal grotto in the Marienglas Cave, Friedrichroda. Historically these were used to create illustrations of the Virgin Mary. This is why these gypsum crystals are also called Marienglas (Virgin Mary Glass). (Photo: S. Brauner)

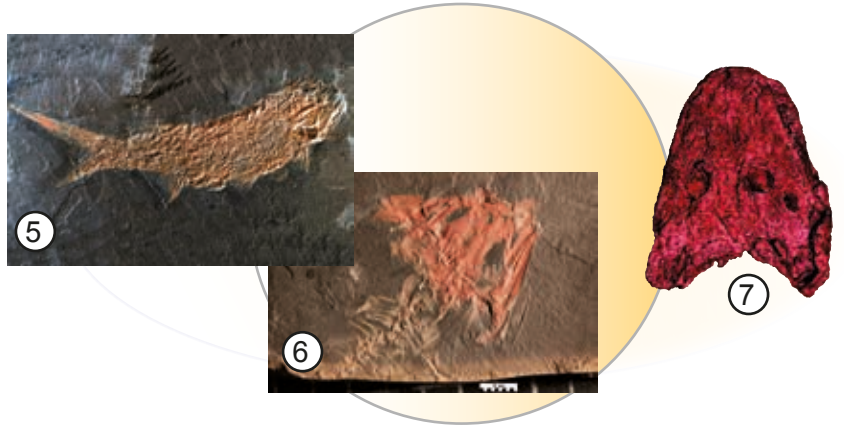
2 The manganese ore mineral Hausmannite on barite, locality Gottlob (Photo: Foto Spelda, Tabarz)

3 La-Wakefieldit (Foto: F. Rüger)

4 The rare Calcium-Magnesium-Vanadium Mineral Gottlobite. Photo Dr. T. Witzke

Witzke; Steins; Doering & Kolitsch (2000): Gottlobite, CaMg(VO) (OH), a new mineral from Friedrichroda.- Neues Jahrbuch für Mineralogie, Monatshefte, P. 444-454.
Witzke; Kolitsch; Warnsloh & Göske (2008): Wakefieldite-(La), LaVO4, a new mineral species from the Glücksstern Mine, Friedrichroda, Thuringia, Germany.- European Journal of Mineralogy 20, P. 1135-1139.

Only 14 minerals have their type locality in Thuringia. Gottlobite and Lanthan (La)-Wakefieldite are very exotic minerals that have only recently been found and described. The type material was found on the spoil heaps of Glückstern mine in Friedrichroda. Both minerals have never been found anywhere else in the world.



Fossils

Between 1885 and 1940 the quarry Plattenbruch am Gottlob produced red sandstone slabs. The thousands of fossils found during this period play an outstanding role in the geological and palaeontological investigation of the Lower Permian.
A reconstruction of a Lower Permian lake habitat is presented in the right rear diorama cabinet.

Figures:

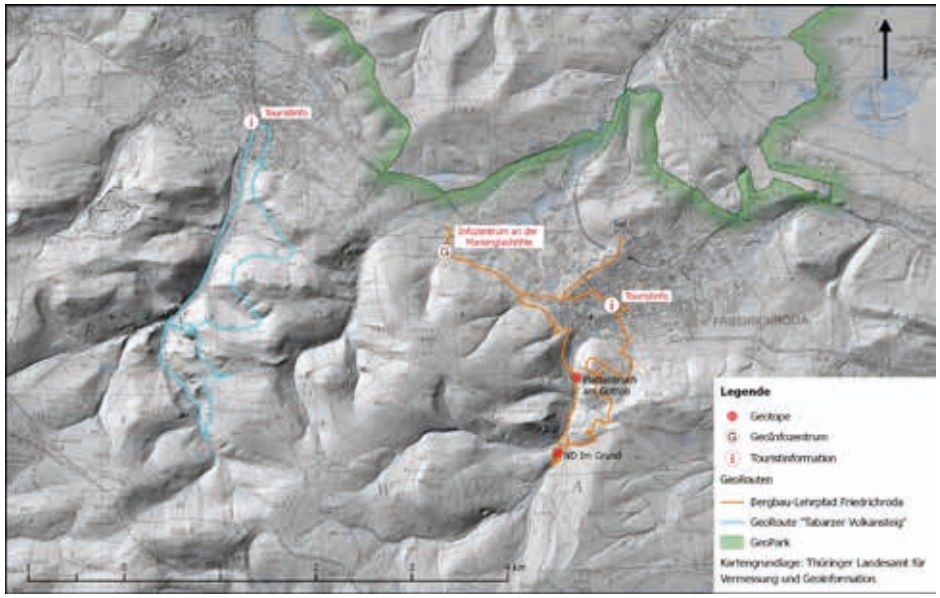
5 bony fish Elonichthys preserved in the typical red colour of the Gottlob-Lake Horizon (Photo: Spelda, Tabarz).

6 Melanerpeton eisfeldi – the largest Branchiosaurinae in the world - (skull length 35 mm), collection KELLNER 1926, Senckenberg Naturmuseum, Frankfurt am Main. (Photo: S. Brauner)

7 skull of Sclerocephalus jogischneideri skull length 12 cm (cast) (Photo: Naturhistorisches Museum Schloss Bertholdsburg Schleusingen)

The Plattenbruch Quarry at the Gottlob

At the foot of the Gottlob in the Schmalkalder Strasse is a 25 m high old quarry face. This is where sandstone slabs, so-called “Thuringian Forest Slabs”, were extracted between 1885 and 1940, to be used for constructing foundations, dry walls or pavements. The abandoned quarry was designated a geological natural monument in 1968.



The quarry also exposes a 2 m thick horizon of mainly black finely laminated mudstones (Schwarzschiefer) about 10 - 6 m above the floor of the quarry. This is the lithified bed of a lake, which is extraordinarily rich in fossils. The diorama “Gottlob Lake“ was created for this unique fossil site and reconstructs fossil life during the Early Permian (Rotliegend).

Life in an Early Permian Lake can be reconstructed using the fossil archive in the lake deposits.

Figures: Gottlob Quarry

Significant fossil finds in Friedrichroda and vicinity

Location	Scientific significance
Gottlob in Friedrichroda	Fossil lake yielding vast numbers of plants as well as aquatic and semi-aquatic fauna remains; Type locality for the Tetrapod track fossil Ichniotherium cottae; Type locality for 5 new minerals
Hartsteinbruch in Tabarz	This is the most productive fossil deposit in the European Early Permian (Rotliegend) at the moment; most famous for the Branchiosaurids (newt-like amphibians) and insect fossils
Bromacker in Georgenthal/ Tambach-Dietharz	Globally significant Tetrapod fossil site, now geo-touristically enhanced by the creation of the Dinosaur Adventure Trail.

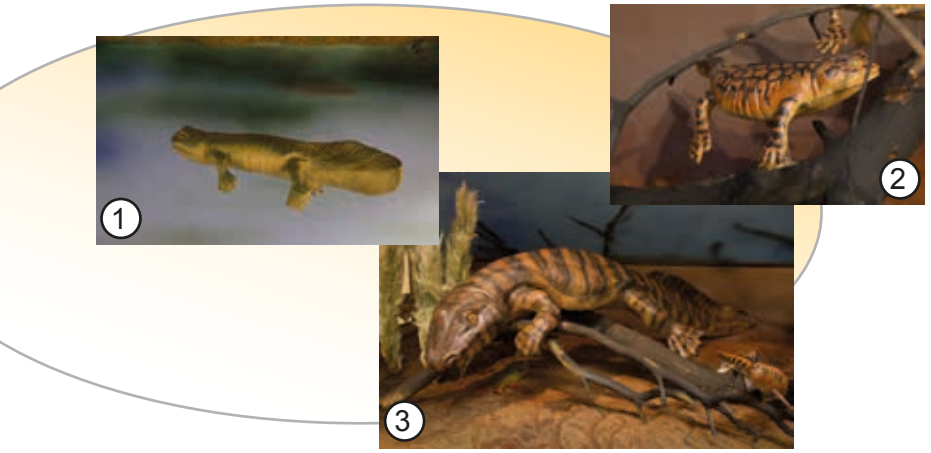
A look into a Early Permian fossil lake

The Early Permian age (Rotliegend) began about 300 million years ago. This was the time when all continents were united by collision to a single supercontinent called “Pangaea”. At that time, Thuringia was part of a high mountain range that was formed at the seam (the so-called Variscan Belt).

Even while the mountains were being formed, they were already subjected to continuous erosion. The weathered material mainly originated from the surrounding upland and was washed into the lower basins and deposited there by episodic events such as heavy rainfall. The loose detritus was transformed to mostly red sandstones and conglomerates as a result of overburden pressure.

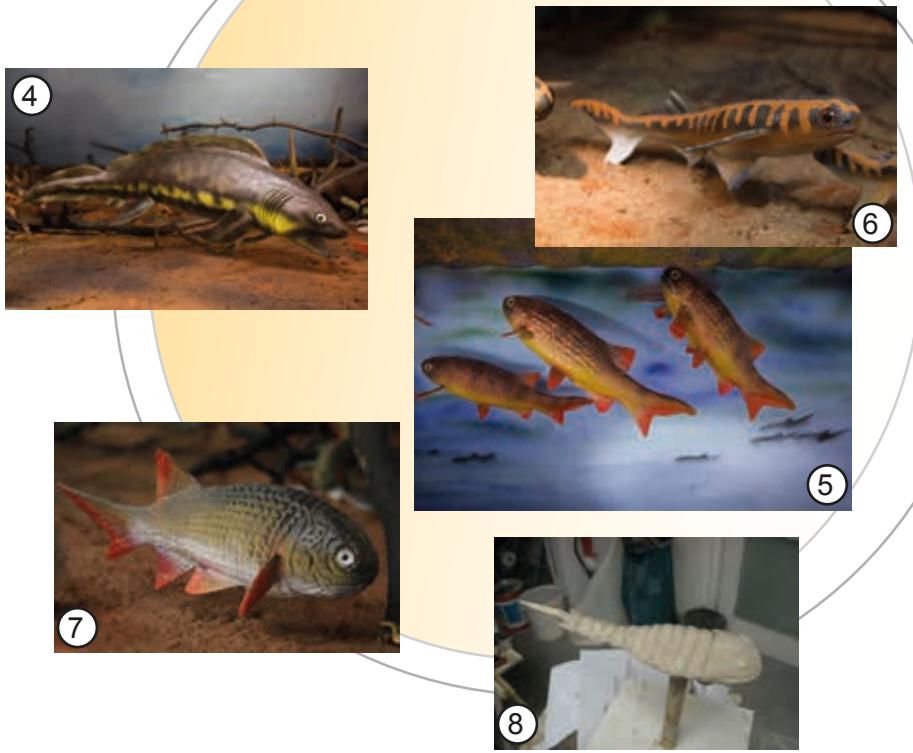
Fossil lake sediments were mainly transformed to silt and mudstones. Several excavations in the area around Friedrichroda have confirmed the existence of a large lake during the Lower Permian. The large number of fossil amphibians, fish and plants suggest a rich aquatic ecosystem and allow us to examine the lake habitat and its shores.

This habitat is reconstructed in the diorama. The fossilized skeletons of the animals are displayed in our rock cabinet. The finds show that Branchiosaurus (a small amphibian) occurred in masses.



Reconstructed amphibians:

- small amphibians - Branchiosaurinae (e.g. *Apateon, Melanerpeton*) (1)
- medium-sized amphibians (e.g. *Discosauriscus*) (2)
- large amphibian *Sclerocephalus jogischneideri* (3)



The Branchiosaurinae were amphibians that dominated life in the water during the Early Permian. They were similar in size and form as today’s crested newts. One main difference is that the crested newt has become very rare due to the destruction of or interference with small water bodies. The strictly protected crested newt is shown in the diorama of present life in the existing pond landscape „ Cumbach Ponds“ (opposite diorama).

In addition to this, the fossil Lower Permian lake yields an abundant fish fauna.

Reconstructed fish:

- fresh water shark *Bohemiacanthus* (4)
- predatory fish *Elonichthys* (5)
- spiny shark *Acanthodes* (6)
- non-predatory fish *Paramblypterus* (7)

A hitherto unknown fossil for the Thuringian Forest was unearthed in 2011 in an excavation near Oberhof. For the first time scientists found the remains of a sea scorpion (*Eurypterida*) (8) in the sediments of a Early Permian lake. The displayed reconstruction was specifically produced for this exhibition.

What is soil and how is it formed

Soils are the uppermost weathered layer of the earth's surface. They are continuously changing dynamic systems in which substances are constantly added and removed. The development of our soils began at the end of the last ice age around 10,000 years ago.

Soils are basically divided into 4 "**horizons** " (layers), each with specific characteristic features

Fig. 1: at the surface is the **organic layer**, mostly containing plant debris such as leaves and needles. As these remains decompose, humus is produced. This horizon is labelled O.

The actual soil begins under the O-horizon. This next layer is the mineral topsoil called the **A-horizon**. Here is where humus is accumulated and mixed with the topsoil while other substances are washed out by rain.

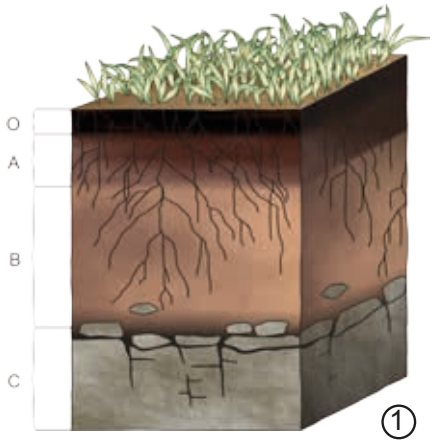


Fig 1.: Dipl.-Geol. Kerstin Fohlert, Text: Dipl.-Geogr. Nancy Allmrodt

Deeper down follows the mineral subsoil or **B-horizon**. Substances washed out from the A-horizon accumulate here.

In addition to this, some mineral conversion also takes place here. The last layer, the **C-horizon** comprises the slightly weathered bedrock.

Soils are formed by the complex interaction of several factors. Basically, the fine material produced by the weathering of the bedrock or parent material forms the substrate for vegetation growth. Eventually these plants will produce humus. These processes result in a distinct soil profile. Characteristic soil types with different properties are the result of the interaction of soil-forming factors.

You can learn much more about soils on the Geo- and Pleasure trail "From Beer to Bratwurst" in the Drei-Gleichen-Region.

www.vom-bier-zur-bratwurst.de

Stony and acid...

The soils of the Inselsberg-Region are mostly formed on Early Permian rocks (Rotliegend): quartz-porphyry, sand and mudstones as well as conglomerates. Typically, the soils are shallow stony loams and leptosols especially on hill slopes.

The quartz-porphyry is usually associated with **extremely acidic brown earths (cambisols), podzolic brown earths, podzols and podzolic leptosols (rankers)**

These soils have a strong to very strong tendency to acidify and even more so when covered by spruce forest. They are of very little significance for agriculture and are usually used for forestry.

Figures: Dipl.-Geol. Kerstin Fohlert (1),
Dipl.-Geol. Stephan Brauner (2)
Text: Dipl.-Geol. Kerstin Fohlert

Fig. 1: shows soil formation on quartz-porphyry. The soil is only 20 cm thick, above the unweathered parent rock.

Many places in the Thuringian Forest are covered by scree. These mostly treeless areas of loose accumulated boulders produce a very special habitat.

Fig. 2: The typical vegetation of the boulder field habitat is presented in the corresponding diorama.

Comparing soil types of the Drei-Gleichen-Region

Soil type: Chernozem

Chernozem means black soil. This is one of the most fertile and therefore one of the most valuable agricultural soil types on Earth. Chernozem is the characteristic soil type of the intensively farmed Thuringian Basin, which begins in the Drei-Gleichen Region. Chernozems are also found in another important area in Germany, the Magdeburger Börde

Chernozems are characterised by a humus-enriched topsoil that can be up to 1 m thick (Ah-Horizon) which immediately overlies the parent material. In this case, the parent material is not a bedrock but loess. Loess is a calcareous wind-blown dust that was deposited here during the last ice ages of the Pleistocene (from about 2.5 million to 10,000 years ago)

The chernozems developed on protected areas of this unconsolidated sediment over a period of centuries in dry continental climatic conditions. One crucial factor for their development is the presence of a steppe vegetation with a dense grass cover, such as can be found in the Hungarian Puszta today.

Soil type: Rendzina

In contrast to the deep soils such as the chernozems, it is also possible to find less developed shallow soil types in the region. A typical representative of these is the Rendzina, frequently found on the exposed Mid Triassic Limestone (Muschelkalk) cuestas in the scarplands of the low mountain ranges and their forelands.

The stony (debris) topsoil (A-Horizon) is usually humus rich but only very thin.

This directly overlies the weathered carbonaceous bedrock (limestone debris). This usually belongs to the younger Mid Triassic Limestone layers in the Drei Gleichen Region, as seen in Fig. 2.

This profile is located on the southwest-facing slope of the Rückberg near Haarhausen immediately next to a newly stocked historic vineyard. Despite a high humus and nutrient content, this soil is poorly suited for agricultural uses due to its restricted depth and unfavourable water retention characteristics.

Figures: Dr. Annett Krüger, Institut für Geographie der Universität Leipzig,
Text: Dipl.-Geogr. Nancy Allmrodt

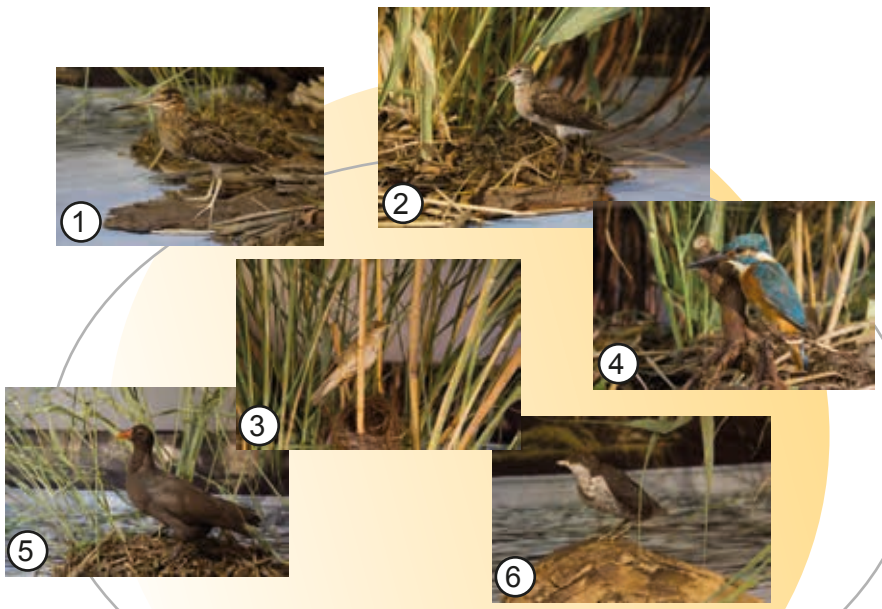
Life Then and Now

The Cumbach Ponds

The Cumbach ponds are an element of the FFH Area No. 206 “Meadows around Waltershausen and the Cumbach Ponds“. The shallow nutrient rich fishponds are located on the northern rise of the Thuringian Forest between Ernstroda and Schnepfenthal.

They are mainly stocked with carp and are managed by the fish farming company Reinhardsbrunn GmbH. The fish are harvested in autumn and the ponds are dammed during the winter months. Since there is very little inflow, the water level is strongly dependant on precipitation. The lower “Old Cumbach Pond” has an island with trees and is reputed to have been created at the beginning of the Middle Ages. The bow-shaped “New Cumbach Pond“ is located above the historic pond and was constructed in the 1970s.

Both ponds cover an area of about 26 ha and the total length of the banks is 3200 m. The ponds harbour a high diversity of birdlife. Ornithologists have been investigating this locality for decades, regularly ringing migratory and breeding birds in the reed beds. A detailed report on the breeding birds of the Cumbach Ponds between 1965 and 1979 was published by J. HOENE, Tabarz in 1982.



The Cumbach Ponds are the most important breeding ground for amphibians in the District of Gotha. They are home to the largest crested newt population in the state of Thuringia! The numbers are well known as all migratory amphibians are counted every year when the amphibian protection fences are set up. Between 7000 and 16000 individuals are rescued each year from being run over by road traffic including common toads, common frogs, pool frogs, crested newts, common newt, alpine newt and the very rare common spadefoot.

Birds:

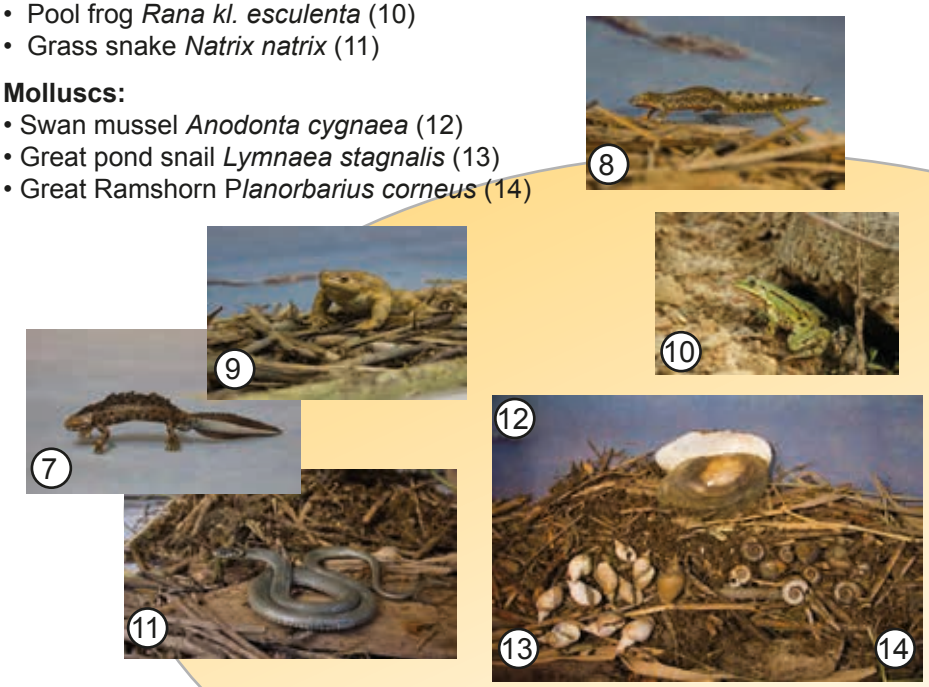
- Common snipe *Gallinago gallinago* (passage migratory species, breeds on wet meadows) (1)
- Wood sandpiper *Tringa glareola* (passage migratory species)(2)
- Reed warbler *Acrocephalus scirpaceus* with nest (breeding species) (3)
- Kingfisher *Alcedo atthis* (feeding species) (4)
- Common moorhen *Gallinula chloropus* (breeding species) (5)
- White-throated dipper *Cinclus cinclus* (inhabits running waters at the pond inflow and outflow) (6)

Amphibians:

- Crested newt *Triturus cristatus* (7)
- Alpine newt *Triturus alpestris* ♀ (8)
- Common toad *Bufo bufo* (9)
- Pool frog *Rana kl. esculenta* (10)
- Grass snake *Natrix natrix* (11)

Molluscs:

- Swan mussel *Anodonta cygnaea* (12)
- Great pond snail *Lymnaea stagnalis* (13)
- Great Ramshorn P*lanorbarius corneus* (14)

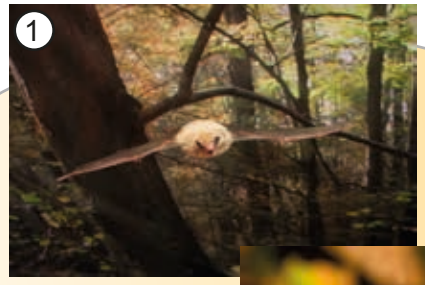


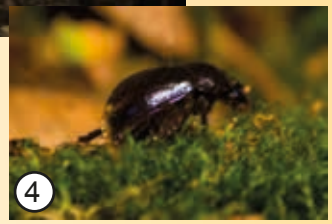
Life on scree

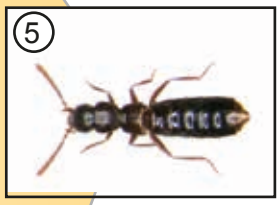
Scree is formed by the weathering of rocks over long periods and is usually found at the base of high cliffs. The constant movement of the deposit combined with a lack of water retention capacity and a missing humus layer prevents the establishment of a forest cover. In spite of this, the scree habitat has a rich flora of lower plants such as mosses and lichens, which are able to grow profusely without the competing flowering plants.

Scree can become extremely hot and dry wherever it is exposed to the sun. Only specially adapted heat-loving plants and animals such as mosses, lichens and spiders can survive here.

Conditions are completely different within the scree body. The climate in the spaces between the boulders is similar to that of a cellar – humid with constant low temperatures. The continuous cavity system permits a steady stream of cooling air to flow. Such conditions allow species from the last ice age to survive just like in a fridge.



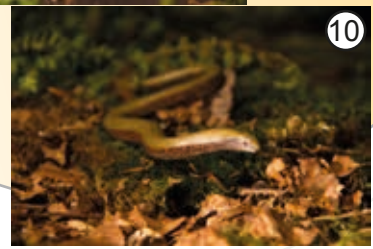




One of the typical species of the scree habitat is the tiny short-winged beetle *Leptusa simoni.*

Mammals:

- Common noctule *Nyctalus noctula* (1)
- Eurasian pygmy shrew *Sorex minutus* (2)



Beetles:

- *Carabus coriaceus* (3)
- Dor beetle *Anoplotrupes stercorosus* (4)
- *Leptusa simoni* (5) (Photo: U. Schmidt, www.kaefer-der-welt.com)

Amphibians:

- common European adder *Vipera berus* (6)
- European toad *Bufo bufo* (7)
- European common frog *Rana temporaria* (8)
- Fire salamander *Salamandra salamandra* (9)
- slowworm *Anguis fragilis* (10)
- common lizard *Zootoca vivipara* (11)

More inhabitants of the scree habitat:

“snow fly” of the species *Chionea*, a wingless winter active species of *Limoniidae*, a family of harvestmen, and the rock-dwelling snail (*Helicigona lapicida*)

The Nature Protection Area Network

NATURA 2000

Many animal and plant species as well as their habitats are on the decline or even critically endangered. In response, the European Commission has established an ecological interconnected network of protected areas to ensure the conservation of these threatened species - NATURA 2000. The areas of the NATURA 2000 Nature Protection Area Network (European bird protection areas and Flora-Fauna-Habitat-Areas) are designated in accordance with two European directives:

- Council Directive 79/409/EEC dated April 2, 1979 concerning the conservation of wild bird species
- Council Directive 92/43/EEC dated May 21, 1992 concerning the preservation of natural habitats as well as wild animals and plants

The areas are selected on the basis that these comprise habitat types and species of global significance for which Europe holds a special responsibility. In Thuringia for example, these are the beech forests and the habitat of the red kite (*Milvus milvus*).

Figures:

1 Publication by the District Offices County Wartburg concerning NATURA 2000-Areas

2 Publication by the District Offices Gotha concerning NATURA 2000-Areas

3 The red kite *Milvus milvus* near threatened species on a global scale

The red kite is still quite common in the East German states. However, even here the red kite faces numerous dangers, both natural (e.g. predation and storms) as well as anthropogenic (intensive agriculture, technical facilities, hunting). Altogether, these factors threaten the survival of our birds of prey.

Several publications concerning NATURA 2000 are available from the Thuringian Office of Environment and Geology (TLUG) as well as the District Offices Gotha and County Wartburg. Issue 25 from the series “Naturschutzreport“ (Conservation Report) published by the TLUG in 2008 is titled „The EU Bird Protection Areas of Thuringia“.

The location of NATURA 2000 Protection Areas and other protected areas around the world are available online in the World Database on Protected Areas (WDPA) at http://www.protectedplanet.net.

Figures:

4 „Naturschutzreport“ 2008 (Issue 25 / 2008)

5 Online database of the worldwide protected areas

National GeoParks in Germany

WHAT IS A GEOPARK?

Come and explore the geological history of the earth: rocks, caves, springs, lakes, fossils, mines and Geo-museums. All of these are found in the geoparks. These are regions of outstanding geological importance, impressive rock exposures and beautiful landscapes.

Geotopes are the most important inventory of the geoparks. Like windows, they provide a view into the inner structure and development of our earth. The objective of every geopark is to protect these windows and explain their significance to everyone.

The national seal of approval “National Geopark in Germany” has been awarded by the GeoUnion Alfred-Wegener-Stiftung since 2002. The National GeoPark Thuringia Inselsberg-Drei Gleichen achieved this status in 2008.

Map: National GeoParks in Germany (Source: GeoUnion Alfred-Wegener-Stiftung)
Photos: Inselsberg - Drei Gleichen: Dinosaur Discovery Trail (P. Rohde); Ice age land at the Oderrand: visitor and information centre (S. Brauner);

TERRA.vita: fossil from Piesberg (S. Brauner); GrenzWelten: Korbach Cleft (S. Brauner); Ruhr: Ewald Mine (P. Rohde); Bergstrasse-Odenwald: Felsenmeer (Dr. J. Weber);

Ries: aerial photograph of the meteorite crater (Copyright Geopark Ries, Fotostudio Herzig); Vulkanland Eifel: Maar lakes (Nature and Geopark Vulkaneifel).

Geotopes in the National GeoPark Thuringia Inselsberg-Drei Gleichen

1 Falkenstein, Tambach-Dietharz, Schmalwasser dam
2 Altenstein Cave, near Bad Liebenstein - GeoRoute 9
3 Mühlberg Spring, Mühlberg - GeoRoute 2 und 3
4 Mountain lake Ebertswiese, Floh-Seligenthal, on the Rennsteig
5 Tetrapod tracks from the Bromacker- GeoRoute 6
6 Tourist mine Finstertal, Asbach
7 Geo-information centre Günthersleben-Wechmar - GeoRoute 5
(Photos: K. Fohlert, S. Brauner)

Discover the Diversity of Geoparks

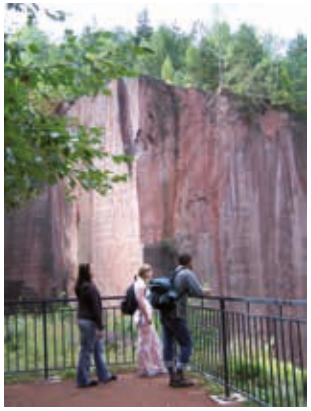
OUR COOPERATION PARTNERS

NATIONAL GEOPARK PORPHYRLAND THE WEALTH OF SAXONY

The geological time journey in the Geopark Porphyrland begins with a fiery episode in the history of the northwest Saxonian volcanic region. Massive porphyry outcrops and abundant kaolin deposits are the source of the wealth of regional raw materials. GeoPortals and GeoTrails have been installed in this idyllic river landscape to explain how these are formed, mined and used.

www.geopark-porphyrland.de

Photos: Former porphyry quarry on the Rochlitz Hill; Junior-Ranger at the famous wind abraded rocks on the Kleiner Berg near Hohburg, (Geopark Porphyrland)



GEOPARK "ORE OF THE ALPS" CERTIFIED GLOBAL AND EUROPEAN GEOPARK

This geopark lies near Salzburg and is located in the Greywacke zone, the Northern Calcareous Alps and the Central Alps.

Underlying the ice age sediments are slate, greywacke, phyllite, limestone and dolomite. The wealth of landforms includes steep reef limestone cliffs, waterfalls, canyons, earth pyramids, tarns and rôches moutonnées. However, the focus here is on the copper shale mining. Today the mining is history, but it lives on in the geopark.

Photos: Mountain biking on the Hochkönig near Mühlbach; the Molterau-Lodge, (H. Ibetsberger)

THE NEAREST GEOPARKS

National GeoPark Kyffhäuser (1) - approx. 75 km
Photo: the leaning tower of Bad Frankenhausen®, K. Fohlert

European, global and national Geopark Harz andBraunschweiger Land, Ostfalen (2) - approx. 100 km,
Photo: The "Devil's Wall" (Teufelsmauer) (Dr. K. George)

Geopark Schieferland (3) - approx. 50 km
Photo: Slate Park, (K. Fischer, Geopark Schieferland)

Name of the Project:

Information centre “National GeoPark Thuringia Inselsberg - Drei Gleichen“ at the Marienglas Cave

Brief project description:

This project was sponsored by the funding initiative Ländliche Entwicklung in Thüringen (Rural development in Thuringia), program “Entwicklung von Natur und Landschaft“ („Developing Nature and Landscape“).

The subsidies are distributed by the Higher Nature Conservation Agency in the state administration office of Thuringia.

The GeoPark exhibition informs about the development of nature and landscape as well as activities in nature currently on offer, such as the nearby GeoRoutes.

Here, Europe and the Free State of Thuringia are investing in rural areas.

The Information Centre was subsidized by the Promotional Initiative Rural Development in Thuringia, as part of the program “Development of Nature and Landscape”.

The subsidies are distributed by the State Nature Conservation Office within the Thuringian State Administration Office.

ELER
Förderinitiative Ländliche Entwicklung in Thüringen
Europäischer Landwirtschaftsfonds für die Entwicklung des ländlichen Raumes