

Swabian Alb UNESCO Global Geopark, Germany Corona virus or the rediscovery of home in the Swabian Alb Geopark



Sinter terraces are typical geosites in the Swabian Alb UGGp.

In spring 2020, the pandemic severely restricted the social life and people's mobility in Germany. Many people used the freedom to move, regained after lockdown, to explore destinations in their own country. This included the Geopark Swabian Alb – which is at first sight absolutely positive. On the other hand, the Geopark was confronted with a frequently recurring problem. Currently, the high number of visitors on calcareous tufa terraces results in considerable damage to these sensitive geotopes. The challenge is to reconcile the interests of the visitor with those of nature and environmental protection.

Calcareous tufa terraces are living geotopes. They are deposited from cool karstic spring water rich in dissolved calcium carbonate. Limestone precipitation is supported by mosses and algae. The growing terraces provide sites for the formation of natural water basins. Many limestone sinter terraces are protected as natural monuments or as geotopes within a nature reserve. This does not prevent many visitors from using the water basins as swimming pools and playgrounds during hot days. The flora of the terraces is often affected by footfall, sometimes resulting in irreparable damage to the geotopes. In the meantime, bathing in the sinter terraces has reached such a scale that many are permanently damaged due to the high number of visitors.

Social media activities by private individuals and bloggers increasingly contribute to the high number of visitors to the terraces. Within seconds, suggestions for bathing with amazing photos of the attractive terraces are posted to followers, who in turn, after a nice bathing experience, send these impressions to their followers. In addition,



A limestone terrace, badly damaged by intense footfall.

some of these entries with recommendations for bathing are illustrated on Google Maps. The high number of visitors poses significant problems for tourist organizations. Increasingly, the Geopark is receiving inquiries about how to deal with the problem on site.

What to do? The most obvious solution is to erect prohibition signs at sensitive geotopes. As first experiences show, many visitors are barely deterred by signs. Prohibition signs do not explain to visitors why entering the terraces is not allowed. Together with the communities of Lenningen and Bad Urach, the Geopark Swabian Alb is trying to take a different approach to the problem. Instead of bans, the Geopark focuses on education. In many places, information panels will be erected to explain to visitors that entering the terraces damages the flora and thus destroys the geotope. In parallel, rope routes will be installed along sensitive sections of the terraces to guide visitors through the sensitive areas. The designation of water playgrounds, where bathing pleasure can be combined with the provision of information through interactive media, is also under discussion.

In addition to the rope routes and the information panels, the Geopark also relies on the educational input from responsible guests who point out the negative consequences to uninformed visitors and often achieve the desired positive change in behaviour. This kind of social control should not be underestimated. Certainly, all of the suggested measures are not always successful, but it is to be expected that the damage to the geotopes will be reduced to a sustainable level.

Siegfried Roth - roth@geopark-alb.de



Trollfjell UNESCO Global Geopark, Norway Towards a more resilient future – Nordic youths encounter past and future climate changes



Mount Torghatten - a national tourist attraction with a prominent sea cave created by marine erosion. Photo by Bjørn Henrik Ormo.

With 1,8 billion of the world's population between 10 and 24 years old we now have the largest youth population in human history. Understanding the commitment and contribution from young people is necessary in working towards a more sustainable future.

Trollfjell Geopark (Norway), Katla Geopark (Iceland) and Rokua Geopark (Finland) have joined forces, providing students in the Nordic countries with an active role in building a more resilient future. Developing a better understanding of past and future global climate change and how to work towards achieving the UNs Sustainable Development Goals (SDGs) is essential in this context.

A coalition between the three Geoparks, three local upper secondary schools and one national park have established a Nordplus Junior-project which aims to study the parallel and interactive development of nature, landscape and human cultures in Nordic rural regions, in the framework of selected SDGs.

Climate change worries young people because it is such a complicated phenomenon. Understanding the functioning of Earth's natural processes is a prerequisite for students to be able to understand the role of human activities in climate change and the importance of recycling in the use of natural resources. Six of the United Nations' SDGs (Goals 6, 7, 8, 12, 13 and 14) have been chosen as the main principles for the project.

The project includes a student exchange programme with visits to all three countries. Due to the Covid-19 pandemic, this autumn's Icelandic visit was conducted digitally with live-streaming and digital groupwork across the countries. The students worked with Global Goal 13, climate action. They were focusing on climate changes, how they can be seen in Iceland and the impact of climate changes in all the Nordic countries.

As part of the work on climate change, Trollfjell

Geopark arranged an excursion for the local students to mount Torghatten, a residual mountain on the strandflat. Torghatten is an extraordinary example of Quaternary landscape evolution which makes it a perfect site to observe the effects of climate change. Waves, frost and salt have eroded the hard granite rock during long periods over the last 2-3 million years. The distinctive hole in the mountain is a marine abrasion cave that has broken through the mountain itself. The area includes raised shorelines with pebbles, beaches and traces of Stone Age settlements, and is a great site to learn about the first human settlements along the Norwegian coast 10 - 11, 000 years ago.

The caves and the ancient shorelines reveal a history of climate change and sea-level change. Field activities play an important role in understanding geological history and are a key source for teaching and motivating the students to engage with the challenges in tomorrow's climate.

Charlotte Olsen - charlotte.olsen@trollfjellgeopark.no
Thea Krossoy - thea.krossoy@trollfjellgeopark.no
Trollfjell UNESCO Global Geopark
<http://www.trollfjellgeopark.no/>

Student excursion at Torghatten. Photo by Trollfjell Geopark.

