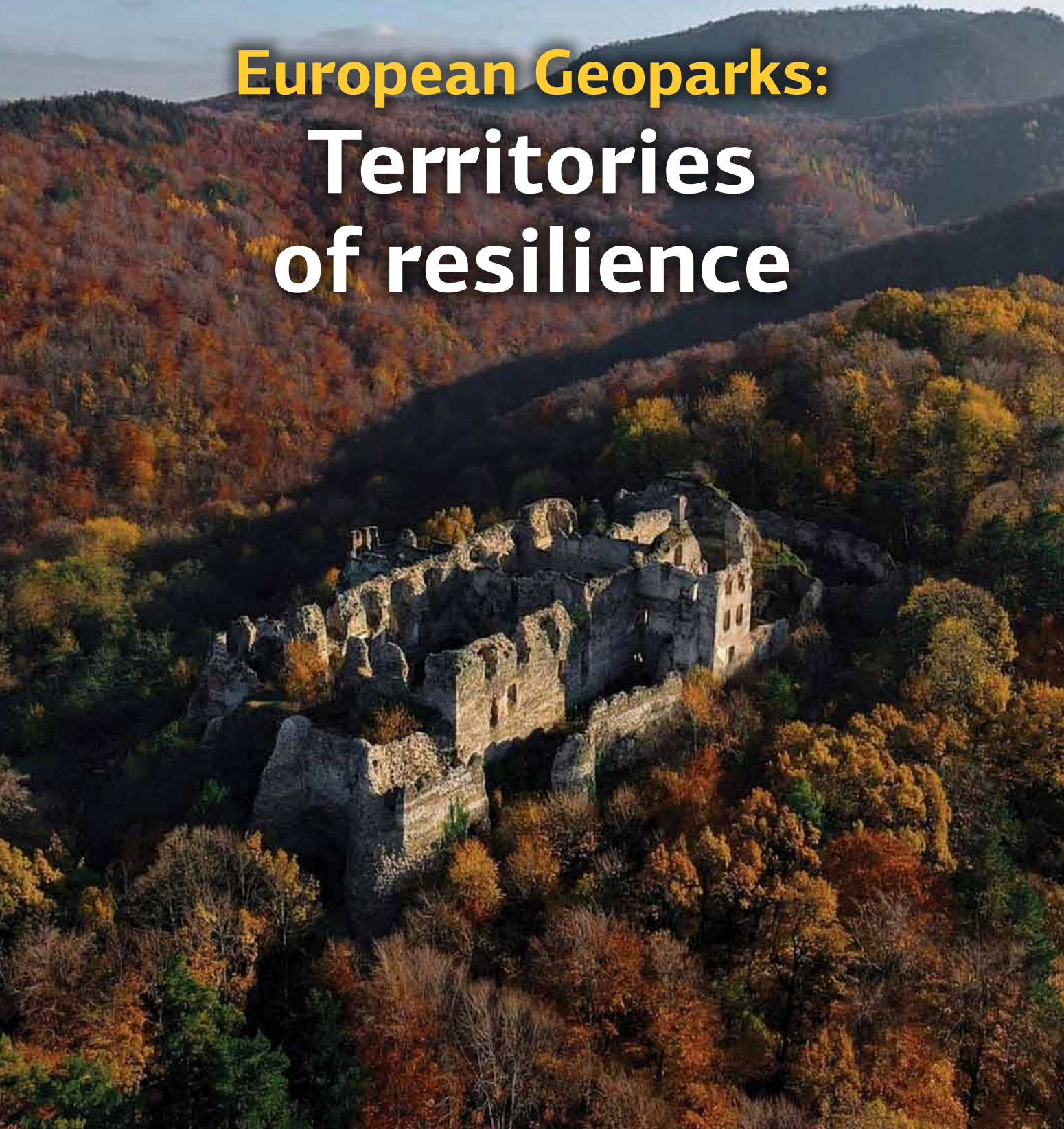


# EUROPEAN GEO PARKS NETWORK

European Geoparks Magazine ● Issue 18

## European Geoparks: Territories of resilience



# THE EUROPEAN GEOPARKS NETWORK

www.europeangeoparks.org

## CALENDAR

### 2021

- March 2021:** 3rd European Geoparks Network Digital Forum
- April 2021:** 211th Session of UNESCO Executive Board – Nomination of New UNESCO Global Geoparks.
- 22nd April 2021:** International Mother Earth Day - Geopark activities
- 18th May 2021:** International Museum Day - Geopark activities
- 22nd May to 6th June:** European Geoparks Week 2021
- 7-20 June 2021:** Digital Course on UNESCO Global Geoparks 2021, Lesvos Greece.
- 5th June 2021:** World Environment Day - Geopark activities
- 8-11 June 2021:** 45th European Geoparks Network Meeting – Papuk UNESCO Global Geopark, Croatia.
- 9 September 2021:** World CleanUp Day - Geoparks activities
- 9-15 September 2021:** 9th International Conference on UNESCO Global Geoparks – Jeju Island, Republic of Korea.
- 11 September 2021:** 46th European Geoparks Network Meeting – Jeju Island, Republic of Korea.
- 13 September 2021:** 3rd Global Geoparks Network Ordinary General Assembly – Jeju Island, Republic of Korea.
- 13th October 2021:** International Day for Disaster Reduction - Geopark activities.
- November 2021:** 41st General Conference of UNESCO.
- 11th December 2021:** International Mountain Day - Geopark activities.

### 2022

- March 2022:** 47th European Geoparks Network Meeting – Hondsrug UGGp, Netherlands, co-organized with TERRA.vita UGGp, Germany.
- September 2022:** Asian Pacific Geoparks Network Coordination Committee Meeting – Satun UNESCO Global Geopark, Thailand
- September 2022:** 7th Asian Pacific Geoparks Network Symposium – Satun UNESCO Global Geopark, Thailand
- September 2022:** 48th European Geoparks Network Meeting – Sesia – Val Grande UNESCO Global Geopark, Italy
- September 2022:** 16th European Geoparks Conference – Sesia – Val Grande UNESCO Global Geopark, Italy

### 2023

- March 2023:** 49th European Geoparks Network Meeting – Hateg UGGp, Romania
- September 2023:** International Conference location to be decided during the 9th UNESCO International Conference, Jeju Island, Republic of Korea



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# Geoparks: Territories of resilience

The European Geoparks Network (EGN) is one of four regional networks of the Global Geoparks Network (GGN) which includes all areas designated as UNESCO Global Geoparks (UGGps).

In 2020, the Covid -19 global pandemic and devastation of the travel, tourism and hospitality industries curtailed activities in European Geoparks. The biannual EGN Coordination Committee meetings were substituted by digital fora and scheduled evaluation and revalidation missions were postponed. Nonetheless, the Basque Coast UGGp celebrated its 10th year as a member of the EGN and the Black Country UGGp (UK), Djerdap UGGp (Serbia), Estrela UGGp (Portugal), Granada UGGp (Spain), Lauhanvuori - Hämeen kangas UGGp (Finland) and Yangan Tau UGGp (Russian Federation) joined the Network together with Maestrazgo (Spain), one of the founding members of EGN. The range of articles also confirms that through networking and collaborating European Geoparks remained resilient, resourceful and creative in the face of adversity.

In response to Covid-19, Luberon UGGp initiated "Luberon Gratitude" to thank pandemic frontline workers. Chablais UGGp provided practical information to a population under lockdown and the residents of Katla UGGp enjoyed almost empty tourist destinations. Interviews with leading scientists provided a digital experience of the English Riviera UGGp.

All Geoparks engage in formal and informal education. Terras de Cavaleiros UGGp diversified by creating online lessons. Park guides and communications staff in Beigua UGGp produced digital events for children. Eight interactive games can be downloaded from Famenne - Ardenne UGGp's website. Idríja and Magma UGGps promoted the effectiveness of the TeachOUT app. Kula - Salihli UGGp provided online training on global climate change. Six summer educational programmes in Lesvos Island UGGp and the virtual gymkhana in Sierras Subbéticas UGGp are examples of exciting new developments. Pollino UGGp focused on rock types and groundwater composition. Advancing Earth science and environmental education within the framework of the UNs' Sustainable Development Goals are objectives in TERRAvita, Trollfjell and Vulkaneifel UGGps.

By initiating new projects and developing online activities, Geoparks addressed the impact of Covid-19 on geotourism. Via its "ParKeeper" project, tourists can become citizens of the Adamello Brenta UGGp. Psiloritis UGGp developed the initiative "Psiloritis Supports its Supporters", while Vikos-Aoos UGGp organized an event to encourage volunteering in the local community. Rocca di Cerere UGGp promoted its cultural heritage in the Rimini TTG Travel Experience Trade show. North Pennines AONB & UGGp provided online talks for The North Pennines Stargazing Festival, and Beaujolais UGGp

invited listeners to join audio tours. Virtual reality models illustrate the landscape's history in Rokua UGGp. Geotourism provision is increased by a new guided tour in Eisenwurzen UGGp, the promotion of lesser known geosites in Bohemian Paradise UGGp and the completed section of the Via Geoalpina in Sesia Val Grande UGGp. Ore of the Alps UGGp advocates mythogeography as the motto for promoting resilience in adults and children.

Marketing and promotion are essential activities. The "Photo Marathon" is a successful marketing tool in Novohrad-Nógrád UGGp. Promoting agricultural products contributes to marketing Cilentò, Vallo Di Diano and Alburni and Villuercas-Ibores-Jara UGGps. Online marketing prepares the Burren and Cliffs of Moher UGGp for the resumption of tourism.

The quality of a Geopark's infrastructure is fundamental to the success of tourism provision. Bergstrasse - Odenwald UGGp uses its Geodatabase to monitor its infrastructure and initiated an interactive SDG platform highlighting projects and activities in its member communities. A new Geopark Visitor Centre in Central Catalunya UGGp, GeoMón UGGp's redesigned Visitor Centre and "The Trail Running Centre Allepuz-Maestrazgo Geopark" are significant developments. De Hondsrug UGGp's exhibition "Farming in the Hondsrug", and the fossil exhibition in the Harz- Braunschweiger Land - Ostfalen UGGp are new attractions. Newly installed toposcopes enable visitors to read landscapes in the Massif des Bauges UGGp. The Olimpline is an exciting attraction in Karawanken/Karavanke UGGp. Naturtejo UGGp solved a geotechnical problem with a 200 m<sup>2</sup> diagram of an active fault.

All Geoparks value their geological, cultural and natural heritage. Troodos UGGp documents the restoration of an asbestos mine. Swabian Alb UGGp highlights the vulnerability of its calcareous tufa terraces. In 1730 farmers transformed agriculture following a volcanic eruption in Lanzarote and Chinijo Islands UGGp. The tree *Abies nebrodensis* is an example of resilience in nature in Madonie UGGp. Sitia UGGp demonstrates the relationship between geology and architecture in Zakros Village. A recovered stolen fossil of a crocodile in Origenes UGGp draws attention to the effect of a collectors' market for fossils.

The Geoparks' varied and imaginative responses to the Covid-19 pandemic demonstrate their potential to participate in the international cooperation essential for dealing with the environmental and economic effects of the global climate change crisis.

**Tony Ramsay**  
 Publication Editor

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# Digital Meetings, a new communication tool for the EGN in difficult times



As we welcomed the New Year 2021, most of us were probably more than happy to say goodbye to 2020. Corona virus, pandemic, Covid-19, these must have been the most frequently used words during the last 12 months. We have all experienced the consequences and restrictions, in our private and working lives. The EGN, as the active Global Geopark Network in Europe, has been

unable to hold physical meetings, conferences or training courses during this period, and scheduled evaluation and revalidation missions were postponed. However, we have managed, we have established other ways to keep in contact!

The 20th anniversary of the EGN 20, planned to be celebrated in Papuk UGGp, had to be deferred, at first for some weeks and months but will now hopefully take place in 2021. When we realized that the Covid-19 situation would stay with us for a longer time than foreseen, we invited all European Geoparks to the first EGN Digital Forum. Not as a replacement for the EGN Coordination Committee Meetings, the Forum is not a decision-making body, but an important tool to meet, to hear from each other, to share information and updates and to feel connected.

The first Digital Forum took place on 5th June 2020 and almost all Geoparks were present. It was important to discuss the future meeting calendar, clarify the nature and possibilities for future digital meetings and of course get updates. Naturally, most colleagues were concerned about



Image from the screen during the first EGN Digital Forum meeting.

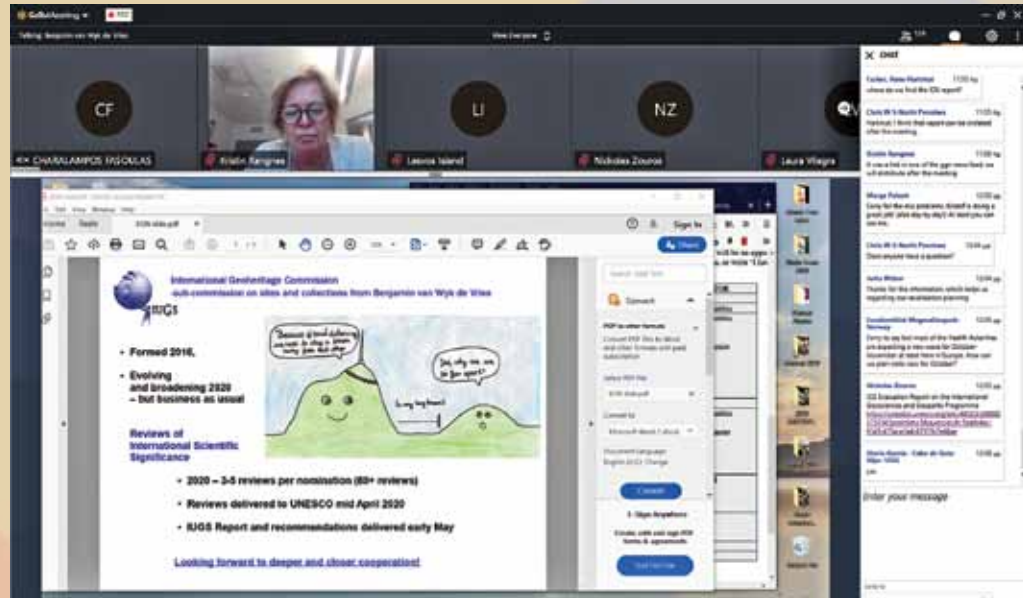


Image used in the presentation by Benjamin Van Wyk De Vries (IUGS) outlining the role of the IUGS Heritage Sites and Collections Subcommittee established in 2016 to review applications for Global Geopark membership.

the UNESCO Global Geoparks procedures, such as revalidations and evaluations, but another important issue on the agenda was “Geoparks and resilience” – a theme that has become the signature for Geopark activities which also points into the future. Already during this first Digital Forum we started to talk about “The World after” – in a context closely connected to the UN’s Sustainable Development Goals. Geoparks can play an active role in supporting resilience in local communities. We also summarized feedback on the structure and organization of future meetings, a process that will continue, as soon as we are able to meet again, as a full decision-making body in the Coordination Committee.

During the second Digital Forum on 15 September, it was a pleasure to welcome six new Geoparks and two new member states into our network. The Russian Federation and Serbia both have their first UNESCO Global Geopark! We agreed “business as usual” concerning the EGN communication tools, the EGN Newsletters and the EGN Magazine.



The 3rd Digital Forum is scheduled for 26th January 2021. As coordinators we are looking forward to meet again in this new format, to discuss further the developments and directions for Global Geoparks – but most of all we hope to meet everybody face to face during 2021!

Kristin Rangnes and Charalampos Fassoulas, EGN Coordinators

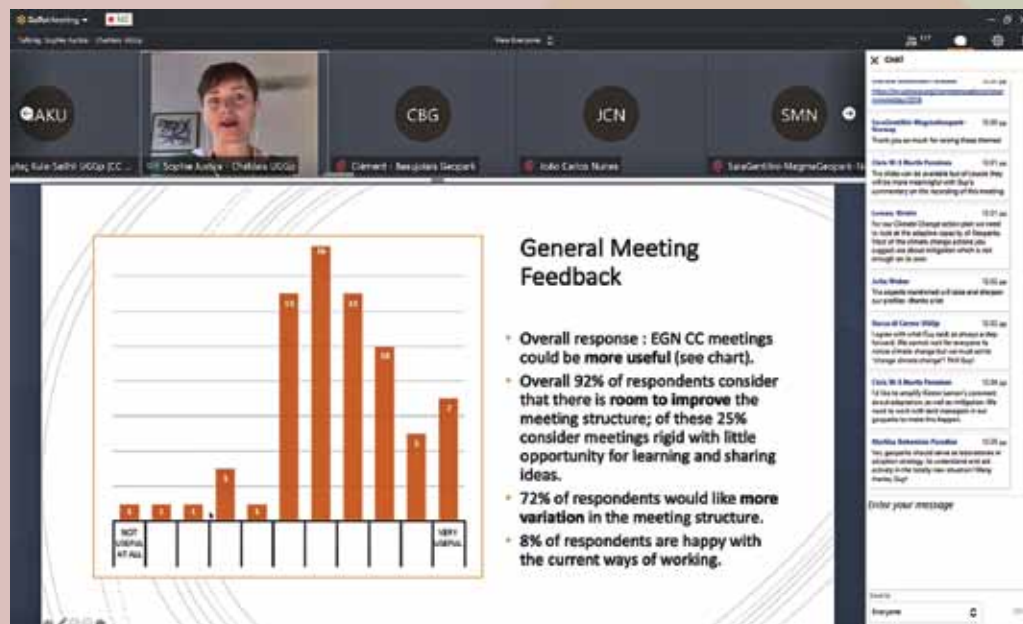


Image used in the presentation by Sophie Justice (Chablais UGGp) summarizing the results and recommendations of the EGN Survey undertaken with Chris Woodley-Stuart (North Pennines UGGp).

# The European Geoparks Week 2020



Every year European Geoparks Week (sometimes called the Geoparks Festival) is held during late May and early June. The dates for Geoparks Week are a major item in the calendar of annual events for all European Geoparks. This European-wide festival aims to raise public awareness about Geoparks, their role in conserving the geological heritage, in educational activities and how they endeavour to provide economic benefit for the local people by promoting geotourism. It also demonstrates to communities that they are part of a wider European Network. However, due to the Covid-19 pandemic, nationwide lockdowns and the breakdown of international and national tourism, 2020 was not a “normal year” for European Geoparks. In previous years EGN Week activities included group participation in outdoor activities, e. g. guided tours, cycling and photography, as well as indoor activities such as talks and social events. In 2020 the possibility for group activities during EGN Week was either restricted or prohibited. Consequently, some programmes involved online provision or combined online with outdoor activities.

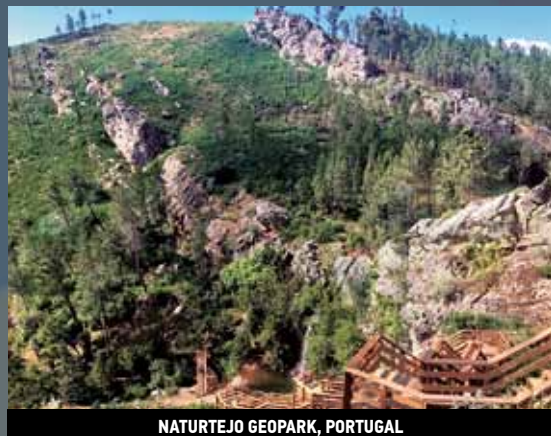
# The European Geo parks Week 2020



TERRAS DE CAVEIROS, PORTUGAL



CHABLAIS GEOPARK, FRANCE



NATURTEJO GEOPARK, PORTUGAL



SIERRAS SUBBETICAS GEOPARK, SPAIN



TERRA.VITA, GEOPARK, GERMANY

Group participation in 2020 EGN Week programmes include introducing participants to geo-routes, activities with children and involvement in World Cleanup Day and the opening event for the United Nations Sustainable Development Goals (SDGs) Action Week 2020. Guided tours provided Cabo de Gata – Nijar UGGp, Novohrad–Nógrád UGGp, Sitia UGGp and Vikos – Aaos UGGp with an opportunity to showcase landscapes and geological features in their territories. Harz-Braunschweiger Land – Ostfalen UGGp explored its georoutes with children and used the opportunity to monitor information provided at its geosites. The Geopark's Geoguides recorded videos of "Geopoints" in the territory. Magma UGGp's Viking Tour provided an opportunity for school children to explore the cultural history of Egersund City. Vis Archipelago UGGp organized kindergarten outings to a museum and a beach and, together with Kula–Salihli UGGp, participated in UN World Cleanup Day in their territories. The newly renovated House of the Pannonian Sea Information Centre provided Papuk UGGp with the venue for a presentation to schoolchildren.

Online programmes were very varied. Central Catalunya UGGp broadcast the narration of a tale about the Geopark and developed an experiment for viewers to understand subsidence of the ground's surface which is common in the territory. Origenes UGGp produced a play for families that addressed problems associated with emotional management and health and also produced



CHELMOS VOURAIKOS GEOPARK, GREECE



IDRIJA GEOPARK, SLOVENIA



LAS LORAS GEOPARK, SPAIN



EL HIERRO GEOPARK, SPAIN



KATLA GEOPARK, ICELAND



GEOPARK HARZ BRAUNSCHWEIGER LAND OSTFALEN, GERMANY



NOVHRAD-NOGRAD GEOPARK, HUNGARY-SLOVAKIA



VIKOS - AOS GEOPARK, GREECE



ROKUA GEOPARK, FINLAND



SOBRARBE-PIRINEOS GEOPARK, SPAIN

nine videos celebrating the International Year of Plant Health. European Geoparks were celebrated in Chablais UGGp in an online travel blog celebrating the 20th anniversary of the European Geoparks Network. Chelmos Vouraikos UGGp organized and judged the results of photographs submitted for the 1st Chelmos Vouraikos Amateur Photo Competition. The Webinar VII Conference on the Geological Heritage of the Canary Islands was included in El Hierro UGGp's online activities. Sobrarbe–Pirineos UGGp organized a web conference on "Glaciers and Karst" and combined with Causes du Quercy UGGp in web conferences and other activities. Online presenta-

tions included an introduction to Katla UGGp and its geology and geological history. Las Loras UGGp provided talks, videos and photographs of Spanish and European Geoparks. Video presentations of geosites in Rokua UGGp received almost 20,000 views. Sierras Subbéticas UGGp organized a virtual gymkhana with five challenges and a diploma for successfully completing the gymkhana. The "Written in Rocks" exhibition in the new Idrija UGGp's Visitor Centre was promoted in a virtual tour. The Geopark also promoted its trails with the TeachOut App on Idrija UGGp trails. Opportunities for self-guided tours are highlight-



KULA SALIHLI GEOPARK, TURKEY



MAGMA GEOPARK, NORWAY



TROLLFJELL GEOPARK, NORWAY



VIS ARCHIPELAGO GEOPARK, CROATIA

ed by TERRA.vita UGGp in its hiking fun booklet "Wanderpass-Wanderspaß". The Geopark also developed a unique activity involving handicrafts using natural materials. Trollfjell UGGp developed and encouraged self-guided GeoBike cycle tours.

During nationwide lockdown Naturtejo UGGp improved its Orvalho GeoTrail and planted thousands of native tree species addressing the dam-

age inflicted by fires in 2017.

The variety of activities delivered, despite Covid-19, is testimony to the Geoparks' resilience and inventiveness. We look forward to building on these achievements in hopefully a more "normal year" for European Geoparks Week 2021.

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Barnabás Korbély - korbely@geopark.hu

The European Geoparks Week 2020



## Massif des Bauges UNESCO Global Geopark, France Increasing awareness about the geological framework and climatic changes

Tamié Géosite.  
View of the Mont Blanc Massif and toposcope about the Grand Arc Massif and the Isère Valley.  
Photo by C. Lansigu.



In 2020 new toposcopes for reading landscape were installed in the Bauges Massif Geopark. The Tamié Fort toposcopes, are located at a recreational site with fantastic panoramic views of the Mont Blanc Massif. The fort is a former 10 sites defence system around the town of Albertville. Over a long period, with declining visitor numbers, the fort was, for a few years, well known for a treetop adventure course. Unfortunately, in 2019 the adventure course equipment was badly damaged in a storm which threatened the economic value of the site. In a demonstration of resilience the company that manages the site, decided, with the help of the Geopark to improve the site. This project included new signage, welcome panels and a map of the site. Two trails are now accessible to the public to discover both the historic and landscaped areas of the site. It also included two toposcopes indicating significant features in the landscape. The first shows the glacial history of the Isère Valley, one of the largest glacial valleys in the Alps. The location and development of the valley was created mainly by the geology. The second toposcope shows the different facets of human occupation in the perched valley of Tamié, including a rich and specific water resource. This project should be completed in 2021 with a geological orienteering race to encourage the

public to search for clues about the geological and glacial heritage at this geosite.

The second set of three toposcopes is installed at the iconic site of the Nivolet Cross which dominates the town of Chambéry. Former dilapidated toposcopes were removed many years ago depriving the public of descriptions of the amazing Alpine scenery and the Le Bourget Lake. The Nivolet Cross is one of the hiking hot spots, both in summer and in winter with snowshoes. Each toposcope deals with one specific theme. The Sire toposcope explains the geological framework that determined the location and the characteristics of the Le Bourget Lake, one of the two largest lakes of glacial origin in France. The lake occupies a depression in molasse deposits and is sited between two folds associated with thrust faults. The other two toposcopes, located near the foot of the 20 metres high cross, concern the deglaciation history of the Le Bourget Lake and more recent collapse of The Granier Mountain due to a substantial landslide in 1248 respectively. The new set of toposcopes allows the public to appreciate the physical and historical characteristics of the area, and to be better prepared to adapt to the ongoing climatic change.

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Le Sire information panel which shows the geological framework of the Le Bourget Lake.

Photo by B. Tiberghien.



Detail of the geology shown on the Le Sire toposcope.  
Photo by B. Tiberghien.



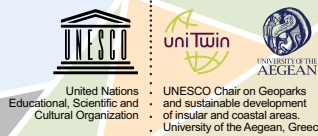
## Digital Course on UNESCO Global Geoparks 2021 UNESCO Global Geoparks and Sustainability



LESVOS ISLAND  
7-20 June 2021  
GREECE

Registration:  
<http://www.petrifiedforest.gr/geoparks2020/>

Information - Secretariat:  
[ml.faber@unesco.org](mailto:ml.faber@unesco.org) | [lesvospf@otenet.gr](mailto:lesvospf@otenet.gr)



## Novohrad–Nógrád UNESCO Global Geopark, Hungary – Slovakia

# The transnational Photo Marathon during the Covid-19 Pandemic

The biannual cross-border Medves Photo Marathon is a popular best practice activity in the Slovak-Hungarian transnational Novohrad–Nógrád UNESCO Global Geopark. The programme is organized in the picturesque Medves Plateau. This is the largest basalt lava plateau in Central Europe and a protected landscape with a rich natural and cultural heritage.

Unfortunately, due to the springtime Covid-19 restrictions most activities, including this planned programme had to be cancelled during EGN Week 2020.

However, the organizers did not abandon the event, and sponsored by the Olympus Company, held the 5th OLYMPUS Photo Marathon from 9 -11 October. The event was attended by 250 amateur and professional photographers from Slovakia and Hungary. Contributors included members of the 16th Honvéd Military Tradition Preservation Group and the Börzsöny Heavy Infantry who enacted historical events and posed as models for the photographers. Photographers and contributors wore face masks, adhered to social distancing and had access to disinfectants.

Unique and special events in Hungarian locations included photography in the House of Geowonders in Salgóbánya and in the nearby forests and mountain peaks. In the Salgo Fortress there was an opportunity to photograph enactments of World War II images, and armored knights stood guard in the castle. Sunrise and sunset tours were directed by local guides and a 27metre high platform served as a location for photographs from a bird's eye view.

Special events in the Slovak area of the Geopark included an opportunity to take sunrise photos. In the afternoon's location, the castle in Fülek/Fil'akovo, photographers could take evening photos of enacted images based on the paintings of Hieronymus Bosch and of models in medieval dress.

Although the event itself is over, as a follow up a photo competition was declared for the best photographs in the categories of landscape, people and wildlife. The main prize, an OLYMPUS E-M5III 1240 Kit (E-M5 Mark III body, EZ-M1240PRO lens, charger, battery, lens hood), was donated by the sponsor. As is customary following the previous four events the



Amateur  
photographers  
in action.



prize giving will be accompanied by an exhibition of the best work.

The event proved to be an exceptionally effective tool for raising public awareness of nature conservation issues, for promoting the Geopark concept and sustainable tourism and for strengthening cooperation between the Geopark's stakeholders and the local inhabitants.

This event also provided amateur photographers with an opportunity to meet and photograph the natural, historical and cultural assets of this borderless and photographer-friendly Geopark.

The multifaceted Photo Marathon is a very successful grassroots marketing tool. Images captured during the event can be viewed by thousands of people using different social media platforms.

The event brings people of different interests together. Through their shared experiences, participants can become advocates of the Geopark by sharing their photos on their own websites and blogs. View the promotional video of the event on [https://www.youtube.com/watch?v=I5e3dmf5h3U&feature=emb\\_logo](https://www.youtube.com/watch?v=I5e3dmf5h3U&feature=emb_logo)

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A lady and her  
knight modelled  
during sunset  
photography  
in the castle in  
Fülek/Fil'akovo.

The website  
announcement  
for the  
cross-border  
Medves Photo  
Marathon.



## North Pennines AONB and UNESCO Global Geopark, UK North Pennines Stargazing Festival gets remote



The Milky Way  
over High Force  
Waterfall.  
© Gary Lintern.

The North Pennines Area of Outstanding Natural Beauty (AONB) and UNESCO Global Geopark has some of the darkest skies in England. This is one of the features that makes the area particularly special, alongside its internationally acclaimed geological heritage, unique combination of rare flora and fauna, beautiful landscapes and fascinating cultural history. The AONB Partnership (which manages the Geopark) has organized a successful Stargazing Festival annually since 2017, with the support of other organizations and partners. The aim is to inspire people to stop and take notice of these fantastic dark skies, to learn more about the world and the universe we live in, and above all to enjoy the experience. The festival is held in October, to coincide with a school holiday week and

to encourage visitors outside of the main tourist season. The long, dark evenings are also the perfect time for stargazing.

The dark skies are one of the effects of an upland landscape. The area has a small population and the distance from cities means that light pollution is very low. Finding a clear night in the North Pennines isn't always easy, but the reward of thousands of stars and the misty band of the Milky Way above the hills is well worth the wait.

In 2020, like everything else, this event had to be modified. Gathering groups of people in an inflatable planetarium, a village hall, or even sharing a telescope outdoors is a difficult and often impossible prospect at this time. The majority of the festival has therefore moved to remote activities for a North Pennines Stargazing Week.

This year's activities include daily star tips from a local astronomer, online talks with a series of expert speakers, how-to guides, an online exhibition of night photography, suggestions of where to go and what to look for, self-led activities for families and lots of social media activity. Attention is also focused on the North Pennines' Dark Skies Discovery Sites – a selection of designated locations spread across the nearly 2000 square kilometres of the Geopark. These sites are fairly easy to access but the low levels of light pollution make them perfect places to enjoy the night sky at its best.

The necessary changes could mean missing out this year on some of the physical experiences and emotional connections that looking through a professional telescope, visiting a planetarium, attending a hands-on event or spending a night under the stars with dozens of others might bring. However, it may also mean that more people, or a broader range of people, are inspired to get out and experience the wonders of the dark night skies for themselves. Watch this space.

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The night sky  
at Burnhope  
Reservoir.  
© Gary Lintern.

## Psiloritis UNESCO Global Geopark, Greece Facing the consequences of COVID-19 in Psiloritis UGGp



## Sitia UNESCO Global Geopark, Greece Geology Shapes Local Architecture and Vice Versa: The Example of Zakros Village in Sitia Geopark

Addressing the Covid-19 pandemic with the Hellenic Geopark Forum's campaign "Experience with safety the Cultural and Natural Monuments of the Greek and Cyprus UGGPs" promotes dairy products.



Addressing the Covid-19 pandemic. The Hellenic Geoparks Forum campaign entitled "Experience with safety the Cultural and Natural Monuments of the Greek and Cyprus UGGPs" promotes the digital tools of Psiloritis UGGp.

Psiloritis UGGp was one of the Geoparks that faced quite severe consequences of Covid-19. Following global lockdown, the opening of the tourism season was postponed for three months and the number of visitors, participants, customers etc. was reduced by up to 80% in most cases for most of the summer.

In adapting to the new situation, the Geopark used several tools for e-training and virtual visits developed in an earlier INTERREG project. The GEO-IN. Psiloritis project produced the Geopark's Interactive web-map which allows visitors to interact with more than 200 virtual 360° panoramas and trips. The Geopark's social media continuously promoted these tools during the lockdown, increasing the visibility of the Geopark and providing an opportunity to enjoy our heritage from a distance, even to groups with disabilities.

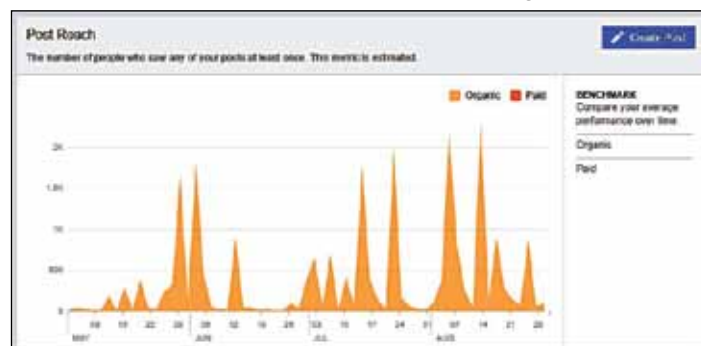
However, overcoming the impact of the pandemic on the local economy presented the greatest challenge. To mitigate the impact and try to support its partners and supporters the Geopark developed the initiative "Psiloritis Supports Its Supporters" which continued through the summer period. It was inaugurated during EGN Week coinciding with the Hellenic Geoparks Forum's wider campaign entitled "Experi-

ence with safety the Cultural and Natural Monuments of the Greek and Cyprus UGGPs". Through the summer the Geopark used its social media channels to promote several of its partners and stakeholders. A short message was developed in Greek and English for each case, accompanied with a few representative images. The posted messages were linked both with the promoted enterprise's web site and social media pages, with the EGN's web pages, and pages of international projects such as RURITAGE, a project focused on Rural regeneration through heritage in which the Geopark is involved.

The very successful campaign reached a broad domestic and international audience. At present we are unable to assess its impact on the local economy and how it may have supported the income of our stakeholders, but we can certainly claim that it increased their, and the Geopark's visibility. Tracking our social media statistics, we can identify some very important facts. Firstly, the campaign appeared to have been appreciated by the enterprises, their followers and the general public. This can be estimated from the number of followers that these posts reached which, in most cases, were several times more than the normal posts of the Geopark and stakeholders. Secondly, connecting the posts with the publicized enterprise's social media also promoted the Geopark's pages resulting in an increase in the number of the Geopark's followers, which almost doubled, and in the number of people following the enterprises. Finally, we can recognize the strengthening of the bonds between the Geopark and its stakeholders, that is demonstrated for example through the increase of the Geopark's post shared by stakeholders during and after the campaign.

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Psiloritis UGGp, Heraklion, Crete, Greece,

Estimates of the number of people who viewed any of the posts.



An image of Zakros village, showing how the settlement follows the river channel.



Villages and groups of settlements are a large part of the image of Geoparks. There is a belief that environment is the only factor which determines the shape and the process of creating these components of the image. Thinking in this way leads to the conclusion that the environment and the conditions that it provides are the only factors which determine where the buildings are built, how they are built and how they are used. But what the eyes see within the landscape of a Geopark is the reflection of a dynamic interrelationship between humans and the Earth. It is the image of a dialogue between the inhabitants and their needs and the factors that the environment provides at each place at a specific time.

Geology in fact influences the shape and the form of the environment. Taking the example of Zakros, it is possible to recognize the elements leading to some of the parameters which influence the architecture of the village. In Zakros the residential area follows the channel created by the river valley. What is more, the form of the buildings is influenced by the abundance of natural materials used in their construction. Stones from the limestone substrate and mortar from the clay and quartz soil that occur in this area, are the sources of the building materials. As a result, the image of the village is of a settlement, which follows

Section of an old wall in Zakros showing the building materials from stone and mortar derived from the local area.



the river's flow and blends with the earthen materials of the area.

But this is just one side of the coin. The inhabitants of Zakros made the choice to follow the river's flow to accommodate the activities that they wanted to develop in this area. Milling cereals in watermills was the main, and initially, the only activity that occurred in Zakros. Furthermore, the local building materials were used to support the economy. These prescribed choices that initiated the creation of the village followed metaphysical paths, became symbols and systems of significance and were produced and reproduced through time producing the image which we see today.

Concluding, what we see in the Geoparks is not merely the result of Earth processes. It is a dynamic reciprocal process between the environment, humans and their activities. The picture that our eyes see and our minds observe is the product of a continuous bidirectional interaction, in which environment and geology does not determine but evokes and provides opportunities, which people use for formalistic or symbolic aspects.

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One of the watermills in Zakros.



## VIKOS- A00S UNESCO Global Geopark, Greece Informing the business community and the local population of the Vikos- A00s UNESCO Global Geopark



Despite the circumstances resulting from Covid-19, during spring and summer 2020, the Management group of the Vikos- A00s UNESCO Global Geopark, Epirus S.A.- Development Agency, continued with its planned activities. However, most were inevitably digital involving online meetings and events.

An exception was the event organized at the open theatre of Monodentri (Monday, July 13, 2020) with the aim of informing businessmen and locals in the Geopark, regarding the latest actions concerning the promotion of the area through the Vikos- A00s UGGp.

The event had a dual purpose; namely to motivate volunteering in the local community, and at the same time to provide information about promoting tourism in the area with new tools, such as the mobile application THEMA App. This was developed within the project "New Technologies in the Service of Developing Interregional Thematic Routes" with the acronym THEMA Project), and was implemented in the framework of the Interreg Greece - Albania Programme.

More specifically, in order to highlight the special geological, natural and cultural heritage of the area, thematic routes were designed and created, focusing on nature and geology, culture and gastronomy, having as their central axis the Vikos- A00s UGGp and the wider area of Zagori. The pioneering element of the project lies in the presentation of cultural-thematic routes through



Testing the THEMA app in the field.

the THEMA app, which combines information for the visitor with the possibility of playing (gamification) through a process involving enrollment and reward. The THEMA app involves tourism entrepreneurs, attracts new audiences and at the same time offers quality and advanced services to everyone including tourists, travel agents and tourism professionals operating in the area.

Apart from the presentation of the application, the other topic developed involved the opening of the Geopark to the local community through its participation in the Volunteer and Business Networks of the Vikos- A00s UGGp.

This event was crowned with success due to the significant participation of the business community and local people, who expressed their interest in participating at all levels. Consequently (Monday July 20, 2020), a working meeting in the premises of Epirus SA- Development Agency was held with representatives of all official tourism agencies of Zagori. The purpose of the meeting was to strengthen the cooperation and association of the management body of the Vikos- A00s UGGp with the local business community through its official representatives and collective organizations involving the Association of Tourist Enterprises of Zagori, the Federation of Rooms to Let of Epirus, the Papigo Professionals Association and the Municipality of Zagori.

The main topics discussed included the creation of a network of volunteers, the promotion of the Geopark through the business community, as well as the registration and promotion of the new THEMA App of the Vikos- A00s UGGp.

For your information, the email access addresses for the application are as follows:

For visitors: [https://play.google.com/store/apps/details?id=com.lime.thema&hl=en\\_US](https://play.google.com/store/apps/details?id=com.lime.thema&hl=en_US) and <https://apps.apple.com/us/app/thema-tourism-app/id1515481330>.

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## Terras de Cavaleiros UNESCO Global Geopark, Portugal Resilience to adversity in the Terras de Cavaleiros UNESCO Global Geopark



Socially distanced visitors viewing exhibits in the Geopark's Visitor Centre.

Nowadays we are facing a global pandemic due to the Coronavirus outbreak and resilient territories such as Geoparks have to adapt to this new reality.

In response to the pandemic, the Terras de Cavaleiros UNESCO Global Geopark has shown its readiness by developing some initiatives, with the purpose of minimizing the impacts of this crisis on the territory.

Firstly, the Geopark created several touristic and promotional videos, highlighting and advertising the territory's rich heritage. Short videos presenting various aspects of the Geopark's heritage were created, for example historical, cultural, gastronomic, religious and mining. These involved interacting with the local inhabitants.

The Geopark diversified its educational provision, creating some virtual lessons about the main themes of the territory. These virtual lessons consist of video lectures given on digital platforms in which previously provided scripts lead to a better understanding of the lesson delivered by the Geopark collaborators.

Finally, in order to enrich and diversify the touristic



A fieldtrip to a geosite in Terras de Cavaleiros UGGp.

offer, the Geopark engaged in partnerships with tour operators from the territory. These partnerships allowed us to create a two-day package where a unique (Geo)tourism experience is provided, promoting the history, the tradition, the culture and gastronomy (GEOfood) of our territory.

Therefore, the Terras de Cavaleiros UNESCO Global Geopark delivers continuity to the learning process, reinforcing the UNESCO pillars, Geoeducation, Geotourism and Geoconservation.

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Adults and children visit a geosite in the Geopark.

## Bohemian Paradise UNESCO Global Geopark, Czech Republic



# Geopark UNESCO Bohemian Paradise in the Covid Period



Children are shown how to grind and polish rocks for making jewelry.



Participants in the the Bohemian Paradise Geopark Day are introduced to gemstones from the Czech Republic

In 2020, Bohemian Paradise UGGp focused its activities on the promotion of lesser-known geosites in order to expand the domestic provision of tourist destinations during the Covid -19 pandemic. On the website [www.geoparkceskyraj.cz](http://www.geoparkceskyraj.cz) the Geopark published 65 geological sites with photographs and descriptions in three languages - Czech, German and English. These localities represent the enormous geological diversity of the entire Geopark. Information about individual geosites is regularly published on Facebook together with a monthly talk by a geologist about one of the geosites recorded on the website.

After the government relaxed first lockdown measures in the summer, the Bohemian Paradise Geopark, in cooperation with the Centre for Ecological Education in the Sedmihorky Camp, organized the Bohemian Paradise Geopark Day. The rich programme, set in a beautiful location framed by the scenery of the Hruboskalsko Sandstone Rock Town and in sunny weather, attracted hundreds of participants - especially families with children, for whom the programme was mainly intended. The event was also promoted by Czech Television.

At thirteen sites, focused mainly on the geological heritage of the Bohemian Paradise, participants could make stone jewelry, try grinding grain on a stone mill, panning for Czech garnets, become acquainted with the gems of the Bohemian Paradise and watch a demonstration of cutting and polishing precious stones. Other activities included: stringing glass beads, making stone rings, carving sandstone sculptures and making sand mandalas. Volunteers from the Centre for Ecological Education provided information about nature in the Bohemian Paradise UGGp. The puppet show "How glassmakers learned to melt red glass" was intended for the youngest children.

Prehistoric man introduced visitors to life in the Stone Age – hunting with spears and making fire by rubbing sticks together received the most attention.

Visitors also obtained information about the Bohemian Paradise Geopark through leaflets, maps and the Bohemian Paradise Tourist Newspaper, as well as from the lecture given by the Geopark's geologist.

### Geopark UNESCO Bohemian Paradise

Bohemian Paradise is not only a picturesque combination of rocks, forests, ponds and folk architecture, but also a unique area with an extraordinary diversity of geological phenomena. It was the combination of biogenic and abiogenic processes together with human activity that gave this region a unique "genius loci".

Over hundreds of millions of years, the area has been at the bottom of seas and lakes, and subject to several episodes of volcanic activity. It is a geological textbook full of rock sandstone towns, ancient volcanoes, gorges, river valleys, caves, karst phenomena and deposits of gems and fossils.

Blanka Nedvědická - [info@geoparkceskyraj.cz](mailto:info@geoparkceskyraj.cz)

Families enjoy the the puppet show "How glassmakers learned to melt red glass".



## VILLUERCAS-IBORES-JARA UNESCO Global Geopark, Spain

# Resilience activities in Villuercas-Ibores-Jara UGGp



The Geopark's president Ms. Charo Cordero inaugurates the new itinerary for La Villuercas.

Managing a Geopark is certainly complicated during a pandemic when social mobility and economic activities have suffered countless restrictions. The educational centres have been closed most of the time although they are restoring classroom activities for the new school year. Field trips and outdoor activities in the Geopark have been restricted. For tourism companies, the impact was very serious during the spring and more benign during the summer season. This also had consequences for levels of employment, which fluctuated strongly. The rate of unemployment increased by more than 11% during the most critical period, and increased by 8% during the rest of the year. Agri-food companies performed well and had a significant role in the Geopark's activities.

In this situation, the Geopark and its partners have increased their joint activity for various purposes:

Firstly, the emergency measures taken by the Geopark members as public administrators:

- The Province of Cáceres (responsible for the Geopark's management) provided grants to support companies. It also facilitated more than 60 opportunities for new jobs in the Geopark's municipalities.
- The Government of Extremadura, in cooperation with the Province, provided other measures concerning tourism. In this case joint marketing activities were proposed for companies in the Geopark.

The EU funded LEADER Group has received 83 applications for new entrepreneurial projects. More than 60 are new economic activities in the Geopark involving an investment of approximately €3,500,000.

Secondly, the Geopark has been involved in some innovative initiatives for companies:

- Integrating experiences of agri-food and tourism companies; increasing the partners associated in the Geopark Companies Association "Geovilluercas".
- Promoting the Villuercas-Ibores-Jara Olive Oil Appellation of Origin and other National Trade Marks for chestnuts and local sausages.
- Promoting a new Marketing Plan for promotion, branding and access to new markets, including the new Geopark webpage.

It is important to note the opening of the new itinerary for the Villuercas Peak Trail following the modification of the 11 km military track approved by the Ministry of Defence as a part of the Geopark's tourism provision. This itinerary immediately became the most visited site in the Geopark.

Regarding the Educational Project Geocentros, a series of on-line activities were delivered. Among them, a collection of sheets called "Learning with Geopaca" about the geological, natural and cultural heritage of the territory, and a word search puzzle about the Geopark's fossils.

Finally, the networking activities have provided many opportunities for exchange with other European, Latin American and Spanish Geoparks. They constitute not only a core activity for the UNESCO Global Geoparks Network but also a very important activity for engaging during the lockdown.

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Javier López - [javier@aprodevi.com](mailto:javier@aprodevi.com)  
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Agri-food honey producing companies are new partners in the Geopark.



"Learning with Geopaca" sheets are available on the Geopark's website.

## 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.

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## 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.

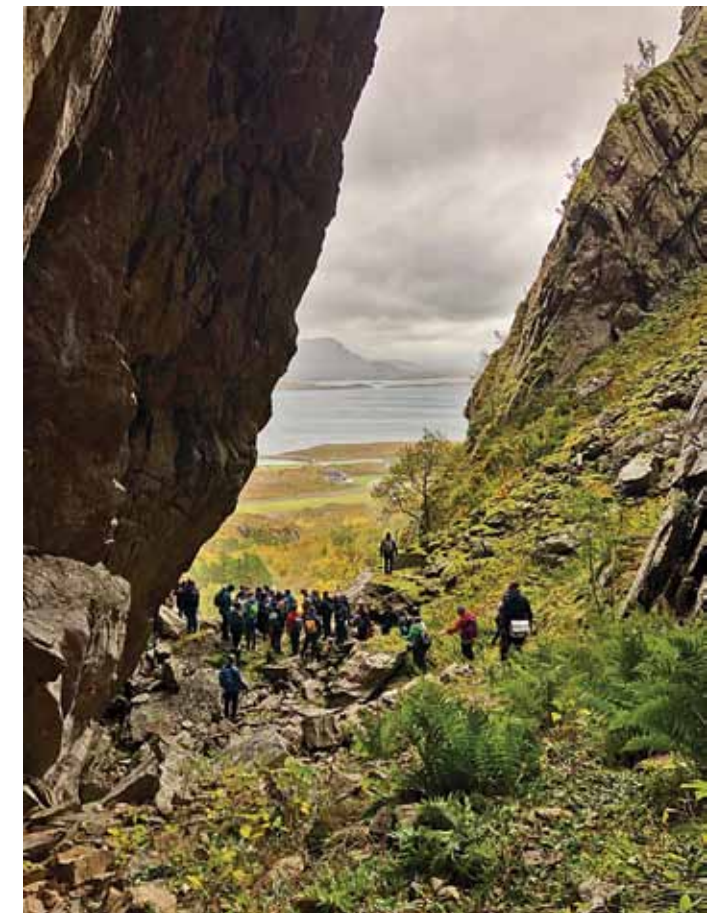
As part of the work on climate change, Trollfjell

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.

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Student excursion at Torghatten. Photo by Trollfjell Geopark.



## UNESCO Global Geopark Styrian Eisenwurzen, Austria Resilience in adversity



**Wolfgang Riedl -  
"Stone and Time  
- Interpreter for  
geology".**

Photo by Stefan  
Leitner - NP Gesäuse.

This year, 2020 is a year that will make history – so why not use Earth's history for resilience in adversity? For several years the UNESCO Global Geopark Styrian Eisenwurzen has focused on the field of nature-education. For example, a new guided tour through the so-called "Valley of Butterflies" - the Spitzenbach Gorge in the municipality St. Gallen - was developed. An essential component of this guided tour focuses on the geology and the history of the gorge. The corona virus crisis in the Styrian Eisenwurzen was consequently used to expand the provision of nature education and geology in the nature tourism programme. Therefore, the UGGp is delighted to have gained a new partner and a new Geopark destination with Mr. Wolfgang Riedl, "Stone and Time – Interpreter for geology". As



**Equipment used  
on the guided  
tour "CSI- ICE  
AGE".**

Photo by Stefan  
Leitner - NP Gesäuse.

a trained and experienced geologist, he is also an interpreter of "the language of rocks" and provides interpretation services for technical questions on geology, engineering geology, hydrogeology, environmental geology or other information about the subsurface. In addition, there is a wealth of interesting information that can be extracted from the rocks and he is the ideal person to provide it. Geo-interpretation and nature education gained a new focus within the Styrian Eisenwurzen area with the help of Mr. Riedl. We are very lucky to provide two of his programmes. In his guided programme "Geology on a plate" you acquire geological know-how, experience regional delicacies and a wealth of background information. For equipment, you only need a good appetite and a thirst for knowledge. Otherwise at "CSI- ICE AGE, you enter a world full of geologically prioritized "crime-scene-research".

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Photo,  
geological  
know-how can  
be gained from  
a closer look.  
Photo by Stefan  
Leitner - NP Gesäuse.



## Burren and Cliffs of Moher UNESCO Global Geopark, Ireland The value of a Geopark business network during times of crisis: an example from the Burren and Cliffs of Moher UGGp, Ireland



**Burren  
Ecotourism  
Network online  
initiative.**

**The 'Burren  
Basket'.**



tourism businesses that adhere to the Burren and Cliffs of Moher Geopark Code of Practice for Sustainable Businesses: [www.burrengeopark.ie/management-partnerships/the-geopark-code-of-practice/](http://www.burrengeopark.ie/management-partnerships/the-geopark-code-of-practice/)

The imposition of national and local lockdowns has resulted in a reduction in capacity and income during the normally busy tourist season; for example the world famous Cliffs of Moher Visitor Experience was operating at 20% capacity during peak season this year.

During the period of Covid-19 restrictions the Burren Ecotourism Network produced a number of initiatives to keep the Burren to the fore as a tourist destination and will continue to roll out online marketing over the winter so when visitors are able to travel again, the Burren and Cliffs of Moher Geopark will be at the forefront of booking destinations.

Initiatives include:

- Producing high quality promotional videos for each Network member, these will be shared across social media over the winter period to encourage bookings for 2021.

- Participation in a photo shoot for the EU Interreg Atlantic Geoparks Project which has developed the new European Atlantic Geotourism Route app (Geotours) available on Google playstore which promotes local tours in each member Geopark in Ireland, UK, Spain, Portugal and France. Visit [www.geotourismroute.eu](http://www.geotourismroute.eu) for more information about this transnational European Geotourism route.

- The annual Burren Food Fayre will be an online event this year with cooking demonstrations from local chefs using local products each evening for a week at 7pm.

- A series of promotional competitions with local Burren Giveaway Prizes such as free weekends at local Hylands Hotels, Doolin2Aran Ferry cruises, Aillwee Cave Hawk walks, Burren Farm Experience tours, Burren Smokehouse VIP behind the scenes tours and lunch, Doolin Cave tour. Visit [www.Facebook.com/VisittheBurren](http://www.Facebook.com/VisittheBurren) for further information.

- The 'Burren Basket' - a collection of locally produced food items available to order online from [www.burrensmokehouse.com](http://www.burrensmokehouse.com)

All these initiatives which enhance resilience in adversity involve close and coordinated cooperation which can only be achieved through a strong local business network. The Burren Ecotourism Network was initially developed and supported by the Burren and Cliffs of Moher UNESCO Global Geopark and is now one of our strongest partners.

**Dr Eamon Doyle** - edoyle@clarecoco.ie

## Famenne-Ardenne UNESCO Global Geopark, Belgium Reinventing the Geopark's activities during the crisis: Famenne-Ardenne for Children



The interactive game for children based on the Hotton Cave.

By combating the impact of the coronavirus the Famenne-Ardenne UNESCO Global proved to be a territory of resilience. In its reaction to the Covid-19 pandemic the Geopark developed various actions for our local partners and for children, the first victims of the Covid-19 restrictions. Access to education for all in any situation is an essential mission for UNESCO Global Geoparks. Famenne-

Promoting local producers and their products.



Ardenne UGGp created eight interactive games based on the different tourist attractions in our territory. These games can be downloaded for free on our website and on our Facebook page

### Supporting our local producers

Becoming a Famenne-Ardenne UNESCO Global Geopark partner provides a unique opportunity to contribute to develop and spread the word about this beautiful region, and also for showcasing and promoting contributors or activities at a local, regional, national, international and even global level. Partners entering into a Partnership Agreement make a contribution towards promoting the Famenne-Ardenne UNESCO Global Geopark and developing its regional identity. They also sign up to a commitment for delivering the quality essential for the region's sustainable and economic growth and are invited to join in other recognized quality initiatives.

During the crisis, we helped our partners, restaurant owners and local producers. We organized a promotional campaign via our social networks and our website to encourage the inhabitants of the Geopark territory to eat locally and to buy from the producers in their villages.

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## Chablais UNESCO Global Geopark, France Innovation and Adaptation in the Chablais UGGp in the Face of Unprecedented Challenges

An early lockdown Facebook article highlighting aspects of the heritage of the area, March 2020.



2020 has been a challenging year throughout the world and has required UNESCO Global Geoparks to draw on their strengths of local engagement and innovation to support their local communities. The entire team from the Chablais UNESCO Global Geopark has continued to work full time throughout the crisis, at times in the office, at others remotely. In response to the Covid pandemic, the Chablais UGGp revised its strategy to meet the new needs of its inhabitants and local businesses in the area. The Geopark has a long-standing strategy of developing projects that enrich and complement existing initiatives within its territory. The Chablais UGGp therefore tailored its projects following a review of the different initiatives of partner sites, tourist offices, educational establishments and local groups.

Facebook post promoting locally produced food during the lockdown, April 2020.



Part of the very rapid Geopark response, as seen elsewhere, was to reinforce its online presence. A need was identified for providing practical information to a population under lockdown, for example, how to source locally produced food. The informa-

tion shared via Facebook was hugely popular and generated some of the highest viewing figures the Geopark has ever recorded. Local businesses and guides reliant on tourism and school activity were supported online through this time with a strong advertising campaign around the attractions and services within the Geopark that would be resumed on the easing of lockdown restrictions. Each publication was carefully written so that the public were informed about our heritage and the linked activities but were not incentivised to breach lockdown restrictions.

Over the summer period strong interest was registered by the Geopark for our activities that had been restructured to ensure compliance with Covid restrictions. The Geopark worked carefully to support the local tourism sector that had been particularly hard hit by the lockdown. Largely made up of independent guides and small businesses, these stakeholders work both with local schools and visitors. A revised Geopark discovery programme took place almost exclusively outdoors and was advertised to local inhabitants and visitors. It was financed by the Geopark and its public partners to ensure guaranteed income for the stakeholders most affected by the difficult circumstances.

The Chablais UGGp is continuing its work despite the ongoing situation by continuing to apply the pandemic health guidelines. We are working closely with schools to continue educational projects, plan events such as the annual science festival, maintain scientific projects and organise stakeholder actions such as Geopark training. The Chablais UGGp has found alternative ways to engage with our communities and drive new projects forward for the benefit of our territory in this challenging time.

**Sophie Justice** - coordinationgeopark@siac-chablais.fr

Facebook post presenting the annual Science Festival in the Chablais UGGp, Autumn 2020.



## Katla UNESCO Global Geopark, Iceland Rediscovering one's own country during Covid-19



Skógar Museum normally popular with visitors provided an indoor destination for the local people during the Covid-19 lockdown.



Iceland, like the rest of the world, has been severely affected by the Covid-19 pandemic. The calm response of the people living in the Katla UNESCO Global Geopark was combined with a willingness to face the challenges posed by the virus. We are fortunate that the area of the Geopark is sparsely populated and social distancing is therefore not as much of a problem as in many other regions.

During the first wave of Covid-19, most countries including Iceland, went into lockdown during March 2020 and the flow of tourists to Iceland stopped almost completely. The Geopark's population is heavily dependent on the tourist industry. Due to the collapse of tourism all tourist companies were forced to decrease their activity or close, due to a lack of customers. This resulted in many people losing their jobs or in the reduction of their working hours.

People reacted differently to the situation of course, but many people, rather than seeing it as a problem, saw it as an opportunity. There was a considerable increase in outdoor activities such as hiking and cycling, and people used the time as a winter holiday and as an opportunity to travel to the almost empty tourist destinations. Those who did not travel used the time for household maintenance, hobbies, relaxation, or to take care of things that had been postponed due to a lack of time. The mood of the society was mostly light hearted during these times and people did not worry too much about the future. Conveniently, Iceland came close to being Covid free at the start of summer, so Icelandic people used the opportunity to be tourists in their own country. New sites were discovered, new friends made, new experiences lived, and a new appreciation gained. The tourist industry adopted well to this new way of life, something that will hopefully be useful for the industry for years to come.

**The absence of tourists at Kvernufoss Waterfall was a new experience for local people during March and April 2020.**

However, nothing lasts forever and the situation has again taken a turn for the worse. The second wave of Covid-19 has begun, borders are mostly closed, the travel months for Icelanders have passed by, and people working in tourism face the harsh Icelandic winter without much certainty. The times ahead are therefore heading into a frightening unknown, but spirits remain high, the society remains ironclad in its solidarity to survive these times and look forward to a bright future. We know that we, together with the rest of the world will get through these times.

Jóhannes M. Jóhannesson - Johannes@katlageopark.is



Skógafoss Waterfall, a popular tourist destination was devoid of tourists during March and April 2020.



## Kula- Salihli UNESCO Global Geopark, Turkey Activities in Kula-Salihli Geopark during the Covid-19 pandemic



Prof. Demir and Dr Aytaç making presentations about the Geopark to representatives from local governments.

**The pandemic has provided a great opportunity for maintaining infrastructure in the Geopark.**



Pandemics are events that adversely affect and even endanger peoples' lives. During such times people usually become anxious, isolate themselves and minimize their activities outside of the home. Undoubtedly, the Covid-19 pandemic also limited most of our activities in the Geopark, including every other aspect of our lives.

Initially, and with great concern, we closed the Geopark to all visitors and events, but then became aware that perhaps Geoparks are the safest places during the pandemic. It was for this reason that we opened areas of the Kula-Salihli Geopark to individual activities such as walking and cycling.

Currently, we are trying to turn the pandemic period into an opportunity for delivering education and conducting infrastructural improvements in the Geopark. On 13 October, the UN International Day for Disaster Risk Reduction, we provided online training concerning global climate change for 280 people. We also used this period as an opportunity to strengthen the infrastructure of the Geopark and to conduct large-scale maintenance



The mayor of Kula accompanied the cyclists while touring the Geopark.

and repair work.

Because of the fear generated by the pandemic, a remarkable number of people have become interested in living in rural, less populated areas and therefore preferred to permanently or temporarily move away from densely populated metropolitan centres.

During this period, local governors limited their activities and started to find new alternatives. This situation raised their awareness of the Geopark concept. In fact, the Geopark is a new concept in Turkey with which local governments are just beginning to become acquainted. Considering the pandemic period as an opportunity, we organized some virtual meetings for some local government officials on Geoparks, geo-protection, sustainable development, rural tourism, rural development and the contribution that Geoparks make to these processes. These highly successful online meetings led to the idea of establishing new Geopark projects and to accelerating projects that had been started in the past.

The Covid-19 pandemic has resulted in our increased understanding of the value and importance of rural areas both in Turkey and throughout the world. It has also shown the need for establishing more Geoparks in Turkey.

We join you in wishing that no other pandemics will occur in the future.

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## Lanzarote and Chinijo Islands UNESCO Global Geopark, Spain

### La Geria, an example of resilience in adversity



Resilience is the capacity communities and regions have to face adverse circumstances, from the current coronavirus pandemic to other situations related to natural catastrophes such as earthquakes, tsunamis, volcanic eruptions and floods.

The Lanzarote and Chinijo Islands UNESCO Global Geopark has one of the most impressive cases of overcoming a highly disastrous situation. The community was not only able to overcome a succession of adversities, but also managed to leave a sustainable system for future generations, as well as a stunning landscape linked to agriculture transformed by farming.

According to historical reports, on 1 September 1730 a violent earthquake followed by a large eruption occurred in an area called La Geria. This was followed by six years of eruptions resulting in the most significant historical event that has ever occurred in Lanzarote. The resulting lava flows and ashes led to a Dantesque landscape, with the burial of a series of villages, towns and fields in what used to be one of the most fertile areas in Lanzarote. Everything was covered with a black

layer of lapilli forming the largest pyroclast field in the Canary Islands.

The eruptions in La Geria left a horrifying landscape. However, after 1736, the farmers made a superhuman effort, digging holes manually in the ash and planted crops in the underlying fertile soil. In this way the farmers created a new, environmentally friendly sustainable method for growing crops. The farmers soon realized that the layer of lapilli prevents the loss of moisture from the ground and, in addition, acts as a fertiliser which stimulates the growth of crops. What started with an unprecedented cataclysm on the island, turned into an agricultural revolution. It is precisely the properties of the ash which made this possible. During the night the surface cools down rapidly. This boosts condensation which is soaked up by the porous ash and filters down to the soil. During the day water loss, as a result of evaporation, is reduced due to the poor thermal conductivity of the ash and the underlying soil is protected from the effects of heat and water loss.

Thanks to how they adapted to the prevailing conditions, the main crop in the La Geria area has consisted of grapes used in wine production. Each vine is grown in its own depression and approximately 75% of the wine is produced from the Volcanic Malvasía grape or Lanzarote Malvasía, recognised as a local grape from the island. Currently more than fifteen vineyards in the La Geria area, with an annual average production of 2,500,000 kg of grapes, contribute €5,000,000 to the island's economy.

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Peasants created a productive landscape following eruptions in the 18th century.

Vine growing using a method of dry farming called enarenado, introduced by the Lanzaroteños after the volcanic eruptions.



## Madonie UNESCO Global Geopark, Italy

### *Abies nebrodensis* an example of “Resilience in Nature”



*Abies nebrodensis* growing in Madonna degli Angeli Valley, Sicily.

A view of *Abies nebrodensis* growing on a forested slope.



surprises us the most.

Nature involves a longer time scale than that of human existence. Humanity's place and impact on nature arises from activities, decisions and choices made with respect to the environment. These change with time and subsequent generations might be amazed at what has been done together with the changes arising from these activities, decisions and choices.

In Madonie UGGp the occurrence of the important plant species *Abies nebrodensis* requires particular climatic conditions linked to fresh and high-altitude environments (1,400 - 1,600 m above sea level). Isolation due to increasing aridity in the Mediterranean basin during the Miocene and Pliocene possibly affected the ancestor of *Abies nebrodensis*.

*Abies nebrodensis*, commonly called the Madonie Fir, is the emblematic species in the Madonie UGGp. Due to its rarity *Abies nebrodensis* is included in the habitat Council Directive 92/43/EEC of 21 May 1992 and was designated as a representative species of the flora of the Sicily Region.

A small specimen of *Abies nebrodensis*, grown in a nursery, was planted in a coastal and low-altitude setting characterized by climatic conditions clearly different from those that favour the normal environmental distribution of the species. The small fir, which survived, sank its roots in an almost unsuitable soil and managed to grow in unusual climatic conditions. The plant's successful growth, in what would theoretically be considered as an unsuitable environment, is an example of the unexpected resilience in the plant's ability to adapt and survive. This small and unexpected success teaches us to overcome our preconceived ideas and to open up new ways of engaging with nature, even if they appear impossible.

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It often happens in life that we are amazed when we find that certain things that we have taken for granted, have considered on the basis of form and aesthetics to be the absolute expression of a territorial identity or a natural law, deviate from the assertion that they are connected. However, sometimes it is that particular “difference” which violates our preconceived opinions that manage to



Children join in transplanting *Abies nebrodensis* grown in a nursery.

# Magma UNESCO Global Geopark, Norway The TeachOUT App: an example of resilience activities in education



A school class learning outdoors in Magma Geopark UGGp.

TeachOUT is the technological product of the ESTEAM Erasmus European Project, which involved three UNESCO Global Geoparks: Magma, Idrija (leader), Naturtejo, the University of Ljubljana and the Information & Communications Technology (ICT, Iceland). From 2016 to 2019 the four-year ESTEAM project was divided into three phases resulting in three manuals, available in English and all project member languages.

The first manual presents research on the curricula in natural science in the three participating countries. The second contains an overview of the countries' methodology related to outdoor teaching in natural science while the third manual provides general information required for using the App. The TeachOUT App is a free mobile App for Android and iOS (iPhone operating system) adapted for the curricula in natural science. It aims to increase practices in outdoor teaching. Nature provides the classroom and students become active players through questionnaires, experiments and competitions. Teachers have the possibility to use their experience to address different themes and

create tailored questions and games according to the children's age. It is a very flexible and engaging tool which increase the appeal of studying natural sciences with young groups. Recently the App has been used by the University of Stavanger for training new teachers within the Didactic Digital Workshop. TeachOUT has also become one example of best practices in resilience within the H2020 European RURITAGE project.

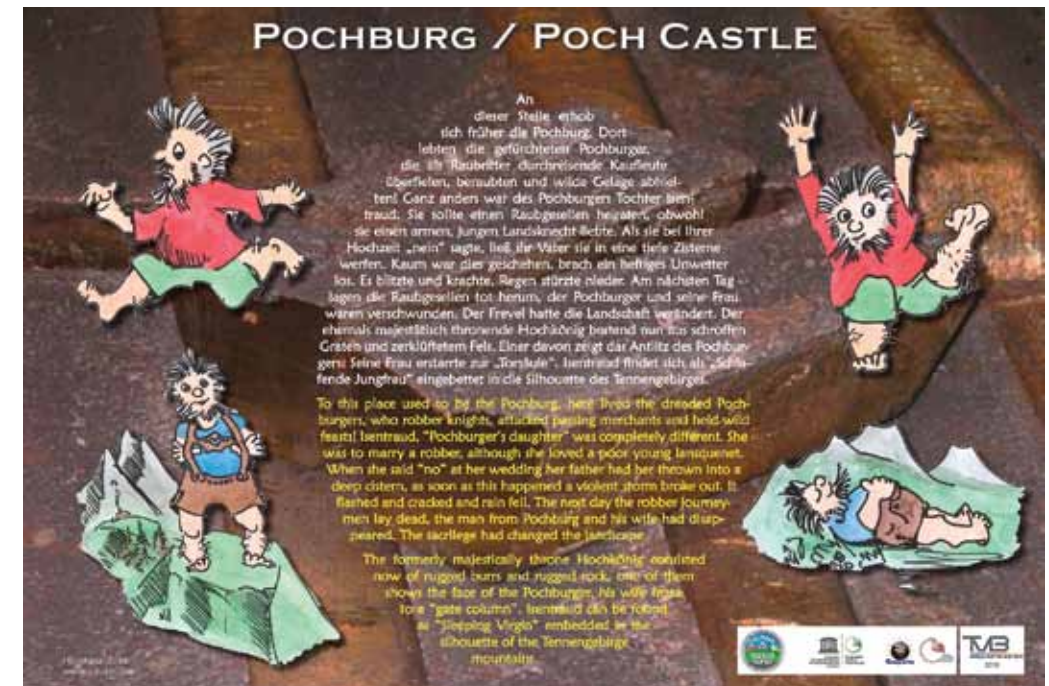
During the Covid-19 pandemic it became even more important to find alternative educational practices for involving children unable to attend school: TeachOUT proved its great potential in the unexpected Covid-19 pandemic and is currently being used by teachers all over Norway.

More information about the project is available from [www.magmaopark.com](http://www.magmaopark.com)

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# Ore of the Alps UNESCO Global Geopark, Austria Mythogeography - Storytelling with a realistic background



Information panel on the Copper Ore Trail with the legend of the Pochburg.  
© GeoGlobe.

Especially in times like these, people like to turn to tradition. This is also the case in the Ore of the Alps UNESCO Global Geopark, where legends, myths and sagas, which have been passed down orally in the Alps for generations, are remembered.

There is always a spark of truth in these traditional beliefs. Many stories are based on God punishing people or individuals for their sacrilegious and wasteful behaviour by withdrawing nature's bounty or transforming them into stone.

Mythogeography, a branch of geotourism, is dedicated to these complex relationships. Natural determinism, perceptual psychology, perceptual geography, and regional studies all play an important role in the following two examples from the Ore of the Alps UNESCO Global Geopark.

The first story the legend of the "Übergossene Alm" (covered mountain pasture), is told throughout the entire Alpine region. The background of the legend is a frolicsome and God-despising alpine society that bathed in milk and rolled butter loaves down into the valley. God punished this behaviour with a snowstorm that buried the mountain pasture and its people under snow and ice. The story relates to the worsening climate and massive expansion of glaciers in the first half of the 19th century. This event was caused by the catastrophic eruption of Mount Tambora in Indonesia, in April 1805 which ejected so much volcanic ash into

the atmosphere that 1816 was commemorated as the "year without summer". The eruption also intensified the Little Ice Age which ended in 1850. This story was intended to encourage people to become less wasteful and persuade them to become more God-fearing.

The second story tells about an outrageous, blaspheming journeyman who lived at the Pochburg in Buchberg near Bischofshofen. When the daughter of the lord of the castle refused to marry a robber instead of her beloved, her father had her thrown into a deep cistern. Soon afterwards, the castle trembled, just as if mountains were collapsing. The next day, the robbers lay dead in the castle and the lord of the castle and his wife had disappeared. The sacrilege had changed the landscape. The once majestically crowned Hochkönig (2,941 m) now consisted of rugged ridges and jagged rocks. One of them shows the face of the lord. His wife froze into a gate pillar. The daughter is embedded as a silhouette of the "Sleeping Virgin" in the magnificent Tennengebirge mountain range.

In the present time we are again in a situation where man has lost a realistic sight of many things. Nowadays in alpine tourist destinations only money counts. Nature is sacrificed to mammon. Storytelling for children and adults is the motto for promoting Resilience in Adversity.

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The stone monument "Torsäule" (gate pillar) commemorates the wife of the Pochburger.  
© Horst Ibetsberger.



Glacier of the "Übergossene Alm" (covered mountain pasture) which is related to the Little Ice Age.  
© Georg Hofmann.



## Rokua UNESCO Global Geopark, Finland An innovative tool kit for geoheritage interpretation in Rokua UNESCO Global Geopark



Rokua UNESCO Global Geopark (Rokua UGGp) in Finland created a new way to demonstrate the development of the Geopark's landscape. Together with Kajaani University of Applied Sciences, Rokua UGGp designed virtual reality (VR) models illustrating the main phases of the landscape's history. The idea for the VR models arose from the fact that geological time and ancient environments are challenging to imagine.

The VR models are located in three geosites around the Geopark: a gneiss outcrop, an esker mound and a rapid. All of the sites have five "time windows" visualizing geological processes, forms of life, climate and cultural aspects at the time when the main features of the sites developed. The time windows connect the ancient landscape to the present with additional information inserted in the VR models.

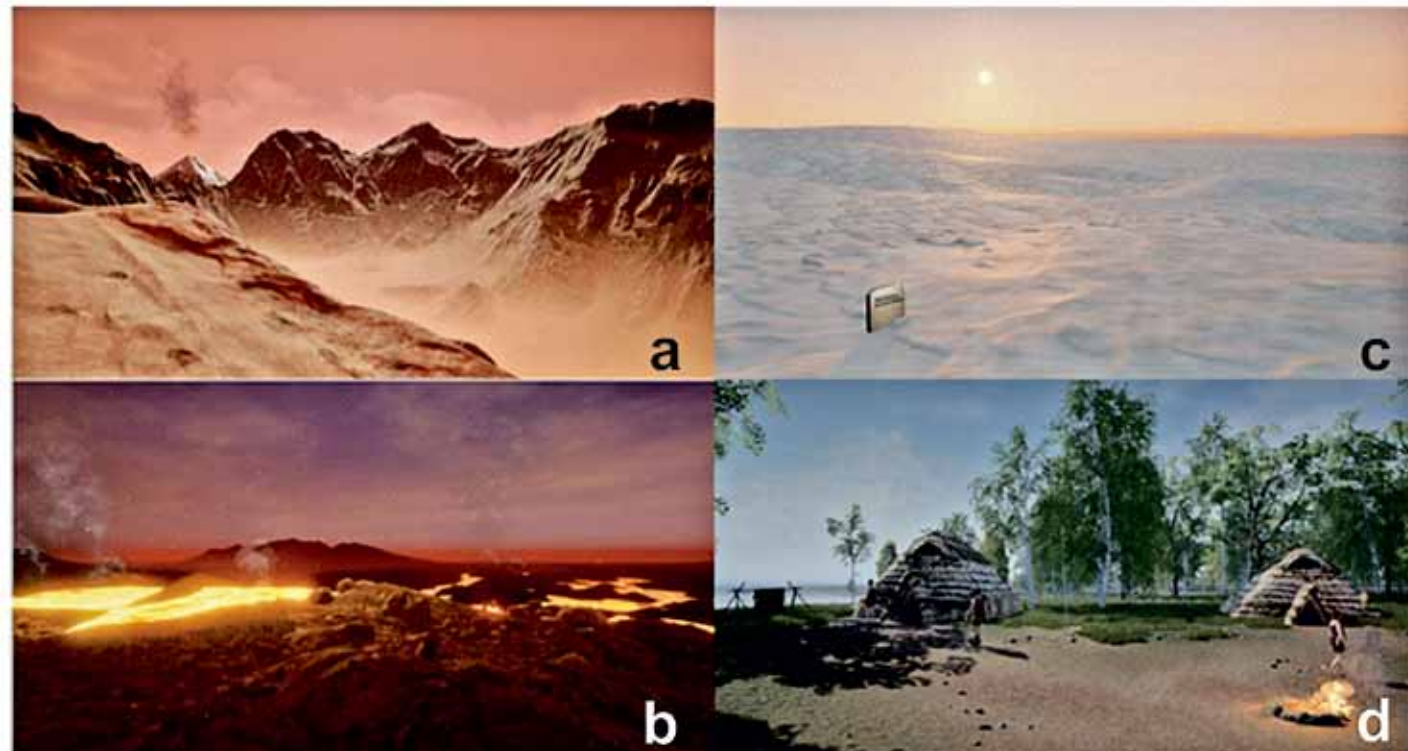
In practice, in the VR models, the user can, for example, stand on an ancient mountain range, explore a glacial melt water stream on the edge of a continental ice sheet, visit a Stone Age village on the prehistoric coastline or cross the modern river using a cable bridge that existed in the 1930's. The VR models are, thanks to the Geological Survey of Finland, Regional Museum of Northern Ostroboth-

nia and contributions from local schools, based on the latest scientific information.

The VR models are part of a larger interpretation tool kit including new Geopark exhibitions with VR Headsets in the area's municipalities, a mobile map application with a link to the VR models and a hand manual supporting the discovery of the area. The mobile application uses an innovation for displaying the VR models: Youtube 360-videos. The application will be available in Apple Store and Google Play from May 2021. All the material is published in Finnish and English.

The package is free for use by the local inhabitants and visitors. The project was financed by an EU-funded regional development project "Time traveller in Rokua Geopark". The local entrepreneurs and teachers have been familiarized with the new tool kit. For a visitor, it provides an attractive overview of the area and its history, and the local people can discover their home region from a new perspective. This tool kit turns a new page in Rokua UGGp's evolution as a high-quality tourism, education and regional development destination.

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Screenshots of the VR models. a) Archean mountains and early atmosphere 2.7 billion years ago. b) Rift valley 2.3 billion years ago. c) Continental ice sheet during the last glacial maximum 18,000 years ago. d) Stone Age village 5,600 years ago.



## Vulkaneifel UNESCO Global Geopark, Germany Vulkaneifel UGGp's new field guide course integrates. Sustainable Development Goals

Resilience is the capability of systems and individuals to cope with significant adversity or risk. The global SARS-CoV-2 (the virus responsible for the Covid-19 pandemic) has proven that focussing on regional strengths, resources and sustainable cycles might bring more resilience than global structures or business cycles. This is in line with the Sustainable Development Goals (SDGs), a list of 17 interlinked goals designed as a "blueprint to achieve a better and more sustainable future for all". The SDGs, established in 2015 by the United Nations General Assembly and intended to be achieved by the year 2030, are part of a UN Resolution called the "2030 Agenda" and are aimed at local actions to achieve these goals.

The Vulkaneifel Academy intends to promote awareness of the special geological and natural heritage of the Vulkaneifel and focuses on the knowledge of geological history, landscape and biodiversity and the knowledge-based awareness of a healthy landscape. It aims at anchoring knowledge about our culture in people's minds, further developing a regional identity and strengthening appreciation for the Vulkaneifel and its sustainable regional development.

During the first phase, we want to build and establish the following pillars in a "learning region":  
A) Nature and geological history with the subject areas: geology, ecology, flora / fauna, biodiversity.

B) Science-based awareness of a health promoting landscape.

C) Regional identity formation, culture, regional awareness with the subject areas: architecture and art history, customs and dialect, regional history, regional products / value chains, regional arts and crafts

D) Overarching cross-cutting issues that are interwoven with components A, B and C or must be considered in terms of sustainable development.

An integral part of the Vulkaneifel Academy is a new training course for local guides with special emphasis on the SDGs by linking the geological heritage of the region, its traditions and regional characteristics. The seminars consider the methods of Education for Sustainable Development and concentrate on how the geological setting has and will influence daily life in the Vulkaneifel.

In the project, teaching materials of regional focal topics such as Volcanism in Vulkaneifel, mineral water and mineral water springs or regional rocks will also be developed for

Kindergarten, elementary and middle school pupils.

In this way, Vulkaneifel makes its contribution at a regional level to the global sustainability goals of the world community, but also for future generations in our region!

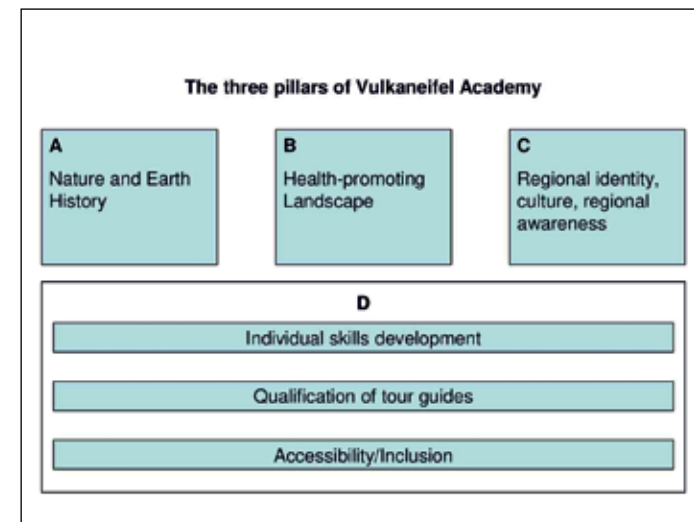
**Julia Franzen** - julia.franzen@vulkaneifel.de

Training tour guides in the Vulkaneifel UGGp.



Pull up banner for the Vulkaneifel Academy.

The three pillars of the Vulkaneifel Academy used to create a "learning region"



# The European Geoparks Network today



The Network consists of 81 Geoparks in 26 European countries (February 2021)  
[www.europeangeoparks.org](http://www.europeangeoparks.org)



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## Lesvos Island UNESCO Global Geopark, Greece Summer Educational Programmes



**Presentation of the creation of the Lesvos Petrified Forest in the museum's audiovisual room.**

Educational programmes, following all the Covid-19 safety protocols, were successfully delivered by the Natural History Museum of the Lesvos Petrified Forest during the summer months at the Lesvos Island UNESCO Global Geopark.

The programmes were designed by Lesvos Island UGGp and delivered at the museum's premises within the framework of the RURITAGE "Heritage for Rural Regeneration" HORIZON 2020 PROGRAMME.

The educational programmes were designed for children of different ages from local communities, refugee children and families, aiming to boost mutual understanding and integration with the local population. Their themes were inspired by the Lesvos Petrified Forest, the museum's collections and the Lesvos Island UGGp. They were delivered by experienced museum educators, seeking to promote the natural wealth of Lesvos and raise awareness of the importance of protecting our natural heritage. By combining learning with entertainment, promoting the four competencies of 21st Century Learning (Critical Thinking, Communication, Collaboration, Creativity) and using play-based practices and innovative interpretation techniques, they provided the children with unique and unforgettable experiences.

The programmes, outlined below, began by introducing the children to concepts like palaeon-

**Learning about the geologic time scale and the extensive interval of time involved in the history of Earth.**



tology, geology, geologic time, fossilization, climate changes, and an animated presentation of the creation of the Lesvos Petrified Forest. This was followed by using the museum's exhibits to gather information related to the main theme of each programme. Encouraging questions and sharing knowledge with multi-sensory games and play-based activities created a fun experience in enriching learning through play and exploration. The programmes usually concluded with hands-on learning activities, ranging from arts and crafts to excavating fossil replicas and conducting science experiments.

"Young palaeontologists" provided an opportunity to become paleontologists for a day, to learn about the plant and animal fossils of the Lesvos Petrified Forest, the methods used in paleontological research and experience excavating at the museum's educational excavation site.

"Deinotheria and Sequoias from the Lesvos Petrified Forest" and "Animals of the Petrified Forest" introduced children in a fun way to the animals of the Petrified Forest and the island's ecosystems 20 million years ago.

"Discover the plants of Lesvos" focused on the fossilized and present-day plants of Lesvos allowing children to compare them and understand the climate changes that influenced the island's flora.

"Geologic Time Scale", an adventure in travel through time in which children became familiar with the extensive interval of time involved in the history of Earth and the evolution of life.

"Let's learn about volcanoes" transformed children into young volcanologists. They learned about the volcanoes of Greece, the geodynamic phenomena involved in volcanic eruptions and created a volcanic eruption.

"Land Art" introduced children to the Land Art movement and its main representatives. They were inspired by the natural surroundings, created their own artworks with natural materials and at the same time realized the need to protect our natural heritage.

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## Sierras Subbéticas UNESCO Global Geopark, Spain Virtual gymkhana connecting students with geoheritage



Main page of the virtual gymkhana.

The lockdown associated with the Covid-19 pandemic severely impaired the normal operation of Geoparks, because the vast majority of activities promoted in these territories occur outdoors. In Sierras Subbéticas UNESCO Global Geopark (UGGp) one of the most successful educational activities, the project "I am a Geoparker", was also suddenly curtailed. This project, formerly initiated by Villuercas-Ibores-Jara UGGp, was established in Sierras Subbéticas Geopark in 2018, in collaboration with several other Geoparks, with the aim of familiarizing young students with their surrounding geoheritage. Since then, two rural schools, Nuestra Señora del Rosario, from Luque, and Blas Infante, from Rute, have been deeply involved in the project, by using the Geopark's geo-heritage as the cornerstone around which the rest of the academic disciplines are taught. Fieldtrips, environmental books, Geopark games and, themed carnivals are all based on the Geopark's values. Every academic year the activities conclude with an interschool meeting celebrated during EGN Week.

In the academic year 2019/2020 the project was developing successfully until the outbreak of the Covid-19 pandemic. The sudden interruption in activities resulted in online interactivity between teachers and pupils. In order to maintain the essence of "I am a Geoparker" in this unexpected virtual environment, and in order to avoid overloading students already saturated with extra academic online activities, Sierras Subbéticas, and the two schools involved in the project, developed a virtual gymkhana.

This is envisaged as a virtual trip through the Geopark. With the final objective of opening a virtual lock, the students have to complete up to five geo-



Page of the gymkhana providing access to the five proposed challenges.

challenges. Each geo-challenge is placed in a key area, and proposes interactive actions in relation to the nearby geosites. The students are committed to ask questions and develop activities, receiving at the same time concise information about the geosites and the geological heritage associated with each geo-challenge. This geo-educational and non-stressful activity familiarizes students with the geoheritage at sites in close proximity, but also from the entire territory.

The gymkhana was launched during the EGN Week, coinciding with the World Environmental Day 2020. The massive response by the students from both centres and the interest in the project "I am a Geoparker" shown by teachers from other schools in the territory confirm the success of this project. This activity has emerged as an educational tool with great potential. Definitely, the gymkhana and its future improvements could be the impetus for a real network of students from the Geopark connected with the territory and its geo-heritage. This is the story about an obstacle that turned into an opportunity and later into a success. A good example of resilience in a Geopark.

Virtual gymkhana: <https://view.genial.ly/5ebc0129e87b0e0d25608fcb/game-breakout-una-aventura-en-el-geoparque-sierras-subbeticas>

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Diploma awarded after successfully completing the gymkhana.



## Idrija UNESCO Global Geopark, Slovenia The TeachOUT App, an Opportunity for Fun Science Education in the UNESCO Global Geoparks



The teacher creates his/her game in the Content Management System by defining sites, uploading contents and publishing them in the TeachOUT application.  
Photo by Bojan Tavčar.

Tasks and challenges at individual sites encourage students to actively explore nature.  
Photo by Bojan Tavčar.



In a rapidly changing world, education has also found itself at a crossroads. Children are growing up in a different world and their needs have changed. It is necessary to attract and retain their attention. While pupils desire more interesting and interactive ways of learning, teachers are reluctant to use, or even fear, new technologies. The fact that curricula and teaching methods are outdated and in need of reform is now widely accepted. Some European countries are already, more or less successfully, engaged in reforming learning processes and curricula.

The partners in the ESTEAM project wanted to bridge the gap between teachers and pupils by designing the TeachOUT application. The app can be used outdoors by schoolteachers or other educators for teaching science (or other subjects). Teachers and staff in all UNESCO Global Geoparks can register to use this application which provides an opportunity to make science more appealing, and encourage pupils to be active learners.

Registration is a 3-step process and is available from <https://www.esteemproject.eu/teachout-contact>. In step one the teacher finds in which of the four European regions his or her country is

situated (support for new users is shared by Idrija, Naturtejo and Magma UGGps). In the second step the teacher contacts via e-mail: Idrija UGGp (Southern and Central Europe); Naturtejo UGGp (South Western Europe); Magma UGGp (Northern Europe). In step three the applicant receives instructions for registration in the Content Management System (CMS). The website also features illustrative video instructions on how to create your own game for the TeachOUT app.

Teachers create games, upload all the contents, such as texts, photos, illustrations in the CMS which, when published in the TeachOUT app, are available for pupils to install on their smartphone or tablet. With the help of GPS tracking, the app guides the pupils to described sites along a specific trail. Pupils are expected to complete various tasks at each site.

Experience shows that it is easier to approach teachers with an already developed game which they can try out for themselves. With the aid of examples, teachers are inspired to create games that satisfy their own educational purposes. However, they need to be given constant support during the creation process of the game.

In Slovenia, teachers are motivated to use the TeachOUT app. The training on the TeachOUT application was included in the catalogue of professional training programmes for teachers within the Ministry of Education. Consequently, those teachers who participate in the programme are also rewarded with points in the promotion system.

We hope that even more teachers and employees in UNESCO Geoparks will begin to use the app. You are kindly invited to create your first game in the TeachOUT app.

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Pupils can perform experiments in nature that would normally be conducted in classrooms, and thus better understand and remember them.  
Photo by Bojan Tavčar.

# TERRA.vita UNESCO Global Geopark, Germany Advancing environmental education within the framework of the Sustainable Development Goals during and after the Covid-19 pandemic



The "Hiking Passport to Fun" ("Wanderpass-Wanderspaß") is a "do-it-yourself tool" that helps families to improve their knowledge of environmental education. Photo by Natur- und Geopark TERRA.vita.

The Covid-19 pandemic had an enormous effect on many aspects of social life including environmental education. The provision of environmental education services needs to change since school trips are no longer possible and guided tours can only be provided for small groups of visitors. TERRA.vita sees the pandemic as a perfect opportunity to further develop environmental education programmes using novel ideas, which could be implemented both during and after the pandemic.

During the current pandemic, TERRA.vita provides the "Hiking Passport to Fun" ("Wanderpass-Wanderspaß"). This free-of-charge exercise booklet is designed as a "do-it-yourself kit" for children to learn about sustainable development. It motivates families to hike across the Geopark area and visit geotopes as well as natural and cultural sites. The visitors have to complete tasks and riddles at specific destinations, which can only be solved after interacting with the information material on-site. Correctly and fully completed passports are rewarded with free family tickets



A group photo from pre-pandemic times showing participants of the "1st Conference on Education for Sustainable Development in UNESCO Global Geoparks" held in the TERRA.vita Geopark in February 2020. Photo by Lea Bose.

for the canopy walkway in Bad Iburg. So far, more than 3,500 hiking pass booklets have been dispensed to families, 20 of which have been returned completed since the pandemic began. The number of returned booklets in such a short period of time is remarkable given the fact, that a completed hiking pass booklet comprises 88 pages and requires hiking through an area of 1,560 km<sup>2</sup>.

Since the beginning of the pandemic, TERRA.vita has also expanded its digital services including guided tours in an online video format, a series of instructions for handicrafts using natural materials, and a "geopoetry riddle challenge".

Within an ongoing INTERREG project, TERRA.vita and the Dutch De Hondsrug UGGp are developing "Education Cooperation for Sustainable Development" in the framework of the UN's 17 Sustainable Development Goals (SDGs). In the context of this project, the "1st Conference on Education for Sustainable Development in UNESCO Global Geoparks" held in Osnabrück in February 2020, was attended by about 50 participants from schools and educational institutions from both Geoparks to discuss the potential for networking. The implementation of this programme will contribute to the revival of the environmental education centres after the crisis. Exchanging students between the Geoparks will also be encouraged.

Many people are not familiar with the 17 SDGs. In order to raise public awareness about the SDGs and the measures that need to be taken to achieve them, especially during the Covid-19 pandemic, the "Natural History Museum am Schölerberg, Osnabrück" was chosen as the first venue for the touring exhibition "Mission 2030" by "Plan International Deutschland" with the title "Save the world with 17 goals!". The exhibition addresses particularly, but not exclusively, school classes. A number of related events including workshops and evening lectures accompany the exhibition. It is hoped that these educational activities will help the communities, shaped by the SDGs, to enter the post-pandemic time.

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The special exhibition "Mission 2030" held at the Natural History Museum am Schölerberg, Osnabrück, from March 2020. Photo by Natur- und Geopark TERRA.vita.



# Parco del Beigua UNESCO Global Geopark, Italy When the going gets tough, Beigua Geopark gets smart!



Introducing the Virtual Bio-blitz.

We had planned a group of spring events to explore Beigua Geopark, but the pandemic emergency and the national lockdown forced us to suspend all outdoor activities in early March. So, we created a new way to enjoy the Geopark, a home-delivery of memories and emotions to share and to stay in touch.

Park Guides and Communication staff teamed up to plan digital events for children, teachers, trekkers and lovers of the Geopark. We engaged followers in our Instagram stories with amusing nature quizzes to learn how to recognize flowers, plants and landscapes, and asked children who usually attend our laboratories to send us drawings of the discoveries made of plants, small animals and mountains with the guides provided.

A child's impression of Beigua UNESCO Global Geopark.



Environmental education activities were transferred online: we held a smart educational pro-



Photographs used in the Virtual Bio-blitz.

gramme for teachers providing interesting ideas for teaching and inspiring future educational projects. The Geopark also recorded short video lessons about nature for primary school children.

Spring blossomed and our guides found many surprising solutions to resolve the missed the opportunities for geo-trekking, birdwatching and activities involved in observing nature activities. With our team of experts, we developed a "Virtual Bio-blitz in nature" to help the Geopark's friends identify, from home, photographs of animals, plants and mushrooms taken on previous hiking trips. Birdwatching went digital too: on Migratory Bird Day we produced a virtual presentation of migratory species on social networks, with photographs and brief lectures from the Geopark's ornithologist.

We celebrated World Biodiversity Day and the European Day of Parks with our first live presentation on Facebook involving a virtual trek through the spring flowers and to investigate the connection between endemic species and geology. During the same week the nine Italian UNESCO Global Geoparks promoted the European Geoparks Week as a shared event on their social media. This involved a long visual story on how water produced the shapes in the landscape, such as the extraordinary canyons eroded by the stream in Beigua Geopark and the other natural wonders which we can admire from Trentino to Tuscany and to Sicily.

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# Naturtejo UNESCO Global Geopark, Portugal

## From a geotechnical potential hazard to an innovative interpretation tool: the active Ponsul Fault



The Ponsul Fault is the main geological structure in the Naturtejo UGp. This 120 km long fault scarp trends WSW-ENE crossing the territory from Portas de Ródão Natural Monument to beyond the Monfortinho Thermal Springs on the border with Spain. Research initiated by Orlando Ribeiro in the early 1940s was followed in the late 1980s by an investigation of the neotectonic activity of this reverse fault by Ruben Dias (Geological Survey of Portugal) and João Pais (University of Lisbon). With a vertical displacement of 50-60 metres, the rate of displacement is calculated at 0.02-0.035 mm/year, with a potential for above magnitude 7 earthquakes at intervals of 35-75 thousand years. The Ponsul Fault which formed about 300 million years ago during the Variscan Orogeny was reactivated 10 million years ago as a reverse fault during the collision of the Nubian plate with Iberia. The Ponsul Fault is an important geomonument in the Naturtejo Geopark. The Virtudes Thermal Spring section was included in the Inventory of Geosites of National Importance within the framework of neotectonics in the Portuguese mainland.



The technical team of the Geopark and the municipality of Vila Velha de Ródão became aware of this situation in October 2018. Working together with IP's Department for Environment and Sustainability, they insisted on mitigating the impact of the shotcrete project. A solution for covering the shotcrete was found: creating a 200 m<sup>2</sup> panel, 12-16 m high, with a diagram explaining the fault movement. The extra budget for changing the original project was generously supported by IP and the rock panel took two months to prepare. Finally, the potential hazard for train traffic was suppressed, and the Ponsul Fault gained a large-scale interpretation panel that can be used from guided boat trips with a panel that explains the origin of Portas de Ródão.

**Geotechnical work at the Virtudes Spring section, Portas de Ródão Natural Monument.**

**Since August 2019 the new Ponsul Fault's diagram (left in the photo) is integrated into the landscape and explains to visitors the evolution of the Tejo River in Portas de Ródão Gorge.**

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© Yilu Zhang.



The solution found to cover the shotcrete with the same rock types in the outcrop highlighting the fault displacement. Later the quartzite was replaced by pink granite due to the absence of legal quartzite quarries.

© José Pires.



# Pollino UNESCO Global Geopark, Italy

## Each rock has its own water



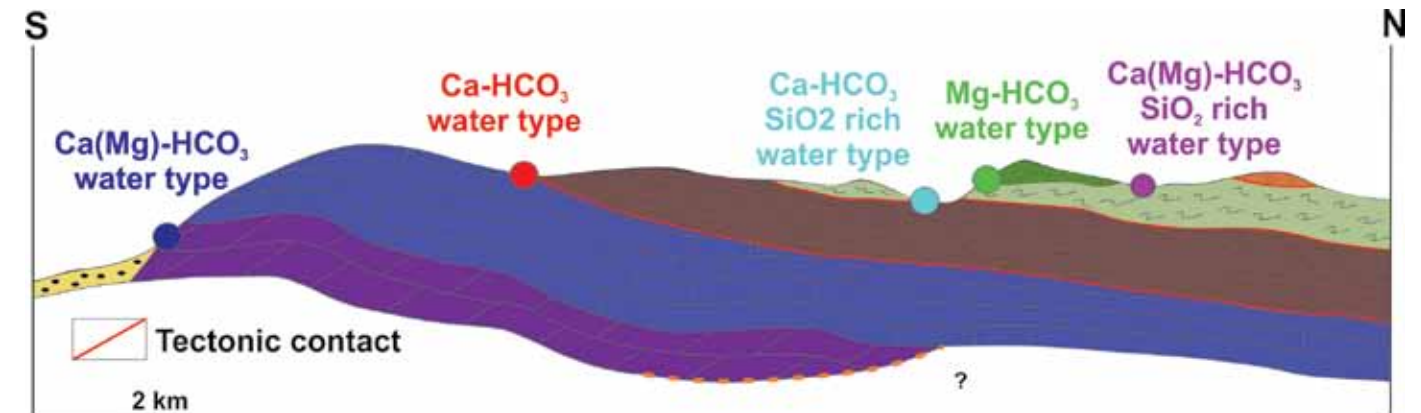
The figure shows the lithological map of the Pollino Geopark area, the location of all studied samples and the line of the schematic geological section (red line).

The Pollino UNESCO Global Geopark covers a large area of northern Calabria and the southern Basilicata regions in Italy. It hosts a complex hydrogeological system comprising several aquifers, each with its own geological, hydrogeological and hydrogeochemical characteristics. The three main hydrogeological complexes hosted in the Pollino Geopark are: a) the carbonate-dolomitic complex made up of limestone, dolostone, chert-bearing limestones and marly limestone; b) the crystalline-metamorphic complex consisting mainly of ophiolite-bearing units and the remnants of crystalline basement rocks and c) the terrigenous-calcareous complex with deep sea deposits and "Flysch type" sedimentary successions. These aquifers are the

main sources for drinking water supplies in the surrounding area and represent a valuable natural heritage. Several springs which discharge from the main outcropping lithotypes were studied to reconstruct the water-rock interaction processes controlling the geochemical characteristics of the shallow or relatively shallow groundwaters of Pollino Geopark. Research conducted by the University of Calabria in partnership with the Pollino Geopark Authority has identified the occurrence of diverse water types clearly related to the different aquifers and hydrogeological settings of the area. The occurrence of multiple interactions between the studied groundwaters and several lithotypes was observed. In detail, the Ca (Mg)-HCO<sub>3</sub> and Ca-HCO<sub>3</sub> rich waters are generally related to the main outcrops of the Triassic dolostone and limestone. The chemistry of these waters is influenced by water transfer between both reservoirs facilitated by connected drainage in an underground karst system. These waters are also characterized by small concentrations of SiO<sub>2</sub> probably derived from silica bearing minerals present as impurities in carbonate rocks or from a minor, time-limited interaction with the widely distributed overlying siliceous-clastic component of the clayey-calcareous arenaceous complex and/or the pelitic-schists and calcareous-schists. The SiO<sub>2</sub>-rich Ca-HCO<sub>3</sub> and Ca (Mg)-HCO<sub>3</sub> waters are influenced to a considerable degree by the dissolution of chert, quartz, and/or other silica-bearing minerals in the clayey-calcareous arenaceous complex and the pelitic schists and calcareous-schists. The chemical characteristics of the Mg-HCO<sub>3</sub> waters, generally emerging from serpentinite rocks, are controlled almost exclusively by the dissolution of this lithotype.

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The schematic geological section shows the stratigraphic relationships between the different lithotypes and the typical emergent area for each chemical water type.

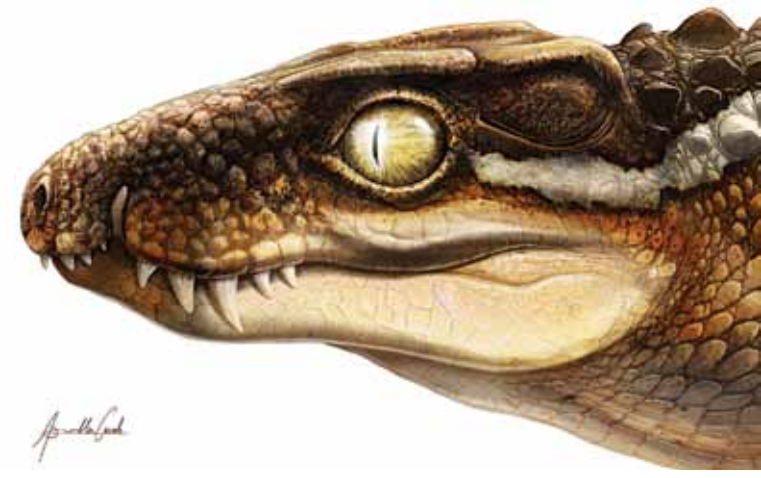


## Orígens UNESCO Global Geopark, Spain

# The stolen fossil of a new species of crocodile described in Orígens Geopark returns home



The new species of crocodile, *Ogresuchus furatus*, described from fossil remains found in Coll de Nargó, within the Orígens UNESCO Global Geopark, has finally returned home after going through a sad spoliation episode. In a study led by the Catalan Institute of Palaeontology, Miquel Crusafont (ICP) describes this relatively small terrestrial crocodile as a potential predator of the offspring of dinosaurs that laid their eggs in the Catalan Pyrenees. The fossil, stolen shortly after its discovery in 2013, was recovered a few weeks later thanks to the intervention of the regional police force "Mossos d'Esquadra".



During the night before the date scheduled for its extraction, the remains of the skeleton were stolen from the "Mirador del Cretaci" site in Coll de Nargó. After few weeks' investigation, the "Mossos d'Esquadra" identified the thief and recovered the fossil remains which were in quite a precarious state of preservation. The research team consisting of members from the Catalan Institute of Palaeontology, Conca Dellà Museum, the University of A Coruña and the University of Barcelona named the fossil *Ogresuchus furatus*, for the "the stolen crocodile ogre", in memory of the fossil's bizarre journey from discovery to recovery. Research published in September 2020 in the journal Scientific Reports shows that *Ogresuchus* is a new member of the family Sebecidae, a group of land-living crocodiles that were common between the Palaeocene and the Middle Miocene (66 to 15 million years ago). The 71.5 million years old fossil is 10 million years older than the oldest known sebecid discovered to-date. This is why the palaeontologist Albert G. Sellés, one of the co-authors of this article, explained that the evolutionary history of this group, that once occupied the apex of the trophic chain, needs to be redefined.

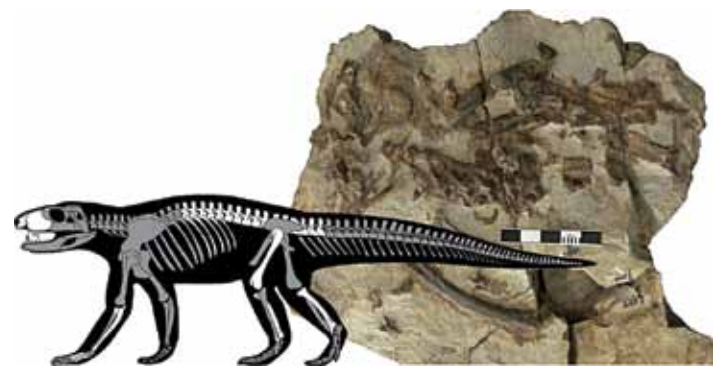
**Reconstruction of the new species of crocodile *Ogresuchus furatus* (Aina and Agnès Amblás. By ICRA-ART / Catalan Institute of Palaeontology)**



The researchers suggested that the fossil remains, located close to a nest of titanosaurian eggs and surrounded by eggshells, corresponded to a very agile and active predator that may have occasionally fed on dinosaur newborn offspring. The research team used Computerized Tomography to investigate the anatomy and conserve the delicate fossil remains of *Ogresuchus*. The results of this research are available on the link <https://qr.go.page.link/vH5sw> or on the QR Code shown below.

**Appearance of the fossil after preparation with an image of the reconstructed skeleton.**

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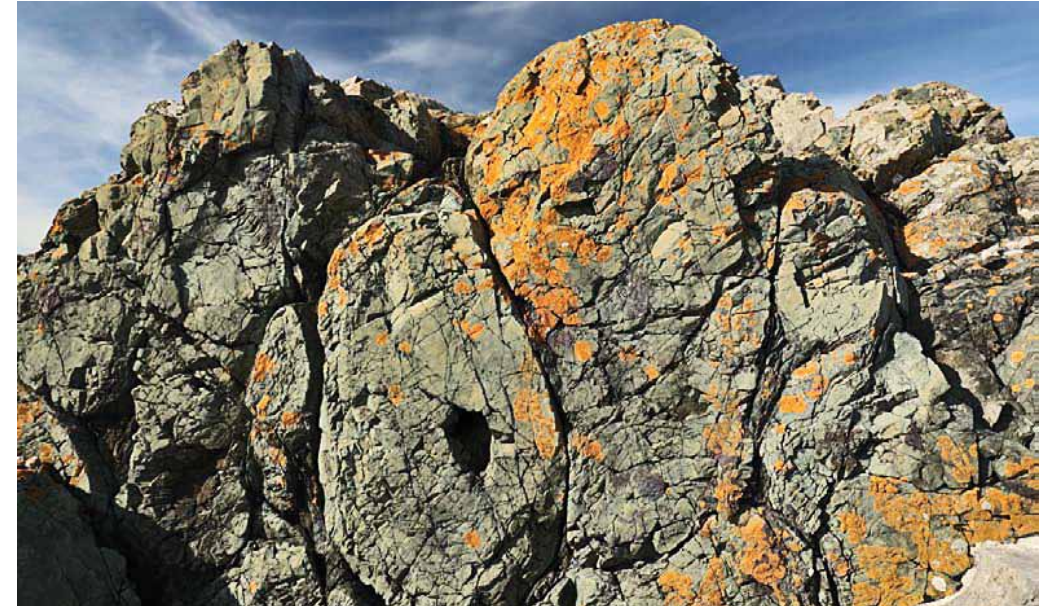


**State in which the fossil was recovered (below) and the moment when the Mossos d'Esquadra return the fossil to Angel Galobart, Director of the Conca Dellà Museum).**



## GEOMÔN UNESCO Global Geopark

# Geology and climate change on the isle of Anglesey



**Precambrian pillow lavas, formed at a spreading centre then moved to a subduction zone, Ynys Llanddwyn, west coast of Anglesey. Photo by Stewart Campbell.**

GeoMôn is redesigning its Visitor Centre to improve the visitor experience and to increase public awareness of climate change in Earth history. The new design shows how the rocks of the Isle of Anglesey (Ynys Môn) provide evidence for environmental change in the past and how we use the evidence from rocks to identify the dramatic changes in climate, sea level and biodiversity that have been recurrent phenomena throughout Earth history.

The GeoMôn Geopark contains a very wide range of rocks spanning 4 eras and 12 geological periods from Precambrian to Quaternary. Encompassing 1.8 billion years, the 100 or more rock types provide an accessible example of environmental change through time both for the specialist and the general public. The Visitor Centre will be a one-way walk through time from late Precambrian plate margin activity to Quaternary glaciations and the present day. The displays will show how global temperature, sea level, atmospheric carbon dioxide and biodiversity have been regulated by internal and external processes.

The transition from late Precambrian to Ordovician on Anglesey shows climate change forced by internal processes. Volcanic greenhouse gases released at subduction zones warmed the climate from the glacial Precambrian and gave rise to optimal ocean temperatures for life, triggering surges in biological evolution. The associated sea level rise in the early Ordovician produced a classic marine transgressive sequence of conglomerate-sandstone-shale on the north coast of Anglesey. At the other

end of the time scale, Anglesey has copious Quaternary deposits left behind by kilometre-thick glaciers. These illustrate climate change due to decreasing radiation from the sun. The displays also show how continental drift has moved Anglesey from the southern to the northern hemispheres, clearly illustrated by Carboniferous limestones with patch reefs and associated tropical biota formed as it drifted past the equator. Visitors will reach the Holocene to witness post-glacial rising sea level and temperature, and the Anthropocene to reflect the growing dominance of humankind in environmental change.

The displays direct visitors to easily-accessed exposures of the rocks on the island so that they can see the evidence for themselves. The take home message is that global warming, with impacts on climate, sea level, and biodiversity is not a new phenomenon. While the present climate crisis is largely man-made, the Earth has experienced massive swings in climate during its long history and the geological record provides evidence for its causes and consequences.

This design directs visitors from the entrance to the exit of the Centre. This makes it easy to regulate the number of people in the Centre and helps visitors maintain social distancing during the Covid-19 pandemic

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**Quaternary glacial erratic on the shore of the Menai Strait, south coast of Anglesey. Photo by Stewart Campbell.**



**Carboniferous Limestone, Lligwy Bay, east coast of Anglesey. Photo by Stewart Campbell.**

## UNESCO Global Geopark Harz - Braunschweiger Land - Ostfalen, Germany The renewed fossil exhibition



**Orthoceras lineare** is a highlighted fossil and provides an insight into life during the Devonian Period. Photo by Dr. Klaus George.



Opening ceremony of the exhibition (from left to right): Fiona Giebeler, Executive Employee of the Regionalverband Harz, Dr. Agnes-M. Daub, Chairwoman of the Natural Sciences Club Goslar and District Administrator Thomas Brych. Photo by Dr. Klaus George.



The exhibition's entrance is decorated with a conspicuous picture of Plesiosaurus and Ammonites. Photo by Esther Czymoch.

The UNESCO-Geopark organized the renewal of the fossil exhibition in the Museum of Goslar. The museum is an official Geopark Information Centre, thus it was the concern of the Regionalverband Harz to modernise the exhibition. New grants for the Geopark from the state of Lower Saxony made this project possible. A temporary employed geologist was assigned to develop a didactic concept and to take the latest scientific findings into account. The Natural Sciences Club Goslar has an extensive collection of nearly 1,300 fossils. For this reason, members of the club were involved in the process of arranging the fossils and creating the renewed exhibition. Now titled "On the traces of life", this exhibition shows a selection of approximately 1,000 significant fossils and invites visitors to take a journey through the history of 540 million years of life on Earth. The exhibits are arranged according to their occurrence within a geological period in the Earth's history. An easy-to-follow colour scheme guides the visitors and helps them to visualise their "travel through time" while walking along the time scale through the exhibition. Its colours are based on the international chronostratigraphic chart. Every renovated showcase emphasizes one fossil, contained in a coloured frame. It is intended to resemble an open window into Earth's history and provides more information about the highlighted fossil. Coloured pictures provide an

insight into the reconstructed living world during different geological eras. Many of the exhibited fossils have their origin in the Harz region. This provides a direct reference to the surrounding area which is highlighted by the occurrence of species named for localities such as *Spirifer goslariensis*. Not only does the exhibition focus on representing different species, it also explains what a fossil actually is, how fossils originate and emphasizes their importance in understanding evolution. Rather than only imparting knowledge, it aims to encourage visitors to investigate palaeontology and to remain interested in the subject. Younger visitors can learn more about the history of life through a wooden trilobite puzzle and a Geopark quiz. Furthermore, the exhibition provides an overview about fossil deposits worldwide. References to other UNESCO Global Geoparks are provided and visitors learn about the international network of Geoparks. The exhibition ends with information about mass extinctions during Earth's history. It should leave an image in the visitors' mind and connect the past with the present problem of climate change and a possible new mass extinction. All information panels throughout the fossil exhibition are provided in German and English to make it accessible for a wider range of visitors.

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## Maestrazgo UNESCO Global Geopark, Spain Maestrazgo Geopark Trail Running Centre (Allepuz, Spain): A Global Geosite with the elite of mountain athletics



The facilities with information in English and Spanish for three itineraries that combine geotourism, sport and culture within a global geosite with a high cultural value. © Chesús Izquierdo.

Trail marker for the project which is the result of a cooperation network between local authorities (municipality), local people and the Maestrazgo UGGp. © Chesús Izquierdo.



The Trail Running Centre Allepuz-Maestrazgo Geopark, is a permanent facility for the discipline of trail running. It provides three itineraries with progressive levels of difficulty from the starting point, the reception center located in the municipality of Allepuz.

The geological setting of Allepuz within the Iberian Range (Aragonese Branch) is stratigraphically significant and is included in the List of Sites of Geological Interest – Spanish Global Geosites project (Id MZ004). The rock sequence, which preserves a complete record of Cretaceous stratigraphy extends to the nearby municipalities of Villarroya de los Pinares and Fortanete, where several stratigraphic formations (stratotypes) have

been described.

Among other geo-attractions, in Allepuz it is possible to see some good examples of mushroom rocks or rock pedestals, a landform formed by a relatively soft rock topped by harder, less easily eroded stone that protects each column from erosion.

The running itineraries include gorgeous landscapes with the Sollavientos River as the backbone. In addition, you can follow the "Camino de los Pilonos" (Pylons Path), a medieval route designated as an Asset of Cultural Interest that dates back to the 13th century, in which more than a hundred 2.5 m high stone and mortar pylons are conserved.

The Allepuz-Maestrazgo Geopark Centre is accredited by the Royal Spanish Athletics Federation. It is one of three Trail Running Centres in Spain and is distinguished by having the highest altitude above sea level and is the only centre situated within a UNESCO Global Geopark.

The creation of these facilities has been possible thanks to a collaborative project between the Allepuz City Council, the Maestrazgo UGGp and more than 30 of the town's residents, who through a volunteer programme, have taken charge of cleaning and maintaining some trails. Since its inception in August 2020, the Trail Running Centre has had a significant number of visitors and athletes and has aroused the interest of the media (<https://t.co/moplsFkWHW?amp=1> Aragón TV Television).

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## De Hondsrug UNESCO Global Geopark, Netherlands

# The Expedition gateway “Farming in the Hondsrug” is opened



The Nabershof is an original Saxon-Style farmhouse.

In July 2020 the new exhibition ‘Farming in the Hondsrug’ was inaugurated in the old museum-farm ‘De Nabershof’. The Nabershof is an original Saxon-style farmhouse dating from 1681. During the summer of 2020 it was officially designated as the Geopark expedition-gateway and provides the complete story of farming in the Hondsrug region.

For thousands of years farmers have played a major role in the use and shaping of the Hondsrug landscape. With arable farming and livestock farming, they have transformed the primal landscape of Drenthe and part of Groningen into an eco- systems services (ES) -village landscape. This special cultural landscape was one of the three reasons for UNESCO to designate De Hondsrug as a UNESCO Global Geopark. The other two reasons are that the Hondsrug region is also both geologically and archaeologically significant and unique.

The exhibition ‘Farming in the Hondsrug’.



### Farming settlements

The Hondsrug has a very special cultural landscape. Nowhere else in the Netherlands can you find such a distinct pattern of human settlements. This pattern reveals the history of farming in the Hondsrug region, and the reshaping of a landscape created during the ice ages. Many villages have retained their original medieval characteristics.

### New Extension

A new extension has been added to the Nabershof complex, housing a fully-developed information centre for the Hondsrug UNESCO Global Geopark. This will present the story of farming life in the Hondsrug region from prehistoric times to the present day. Here you can learn more about how the landscape was formed with ‘essen’ (raised cultivated fields) and ‘esdorpen’ (farming villages), and also about ancient village boundary markings, land redistributions and modern agriculture. You will also see the different types of farmhouses built in the Hondsrug. The information is presented via interactive touchscreens, film clips, photos, audio clips, animations and also old farming vehicles, implements and documents.

### Unique hunebed, the Long Grave

The hunebed (megalithic grave) called the Langgraf (Long Grave) is situated in a small woodland behind the museum. It consists of two smaller graves surrounded by a circle of large stones, 40 m long and 7 m wide; it is the only one of its kind in the Netherlands.

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## Rocca di Cerere UNESCO Global Geopark, Italy

# Rimini TTG Travel Experience hosts Rocca di Cerere UNESCO Global Geopark: Sicilian cultural heritage



Meetings between key players and buyers at the TTG Travel Experience in Rimini.

**TTG Travel Experience: more than a simple trade show.** Rimini hosts the annual TTG Travel Experience, which is advertised as “the only true gateway to the Italian tourism market”. The Trade Show, from 9th – 12th October 2019, provided an opportunity to meet experts from all over the world and to participate in several meetings and promotional activities. The main goal of TTG Travel Experience is to promote and expand business and marketing opportunities in Italy and abroad.

**The Sicilian cultural heritage between geology and mythology.** The influence of the Sicilian cultural heritage in Rocca di Cerere UNESCO Global Geopark was presented in colour coded itineraries inspired by the mythological features drawn from the power of “Tellus”, the ancient Roman goddess of the Earth, and ancient pagan traditions handed down from one generation to another. In ancient Roman religion, Tellus was worshiped in association with the goddess Ceres. Ceres is the goddess of agriculture, grain crops and fertility and Tellus provided the place for the crops to grow. The myth telling the story of Ceres, associated with the plateau valley of Enna and the rock of Ceres in Rocca Di Cerere UGGp, is intertwined with the geological history of the Mediterranean basin.

**The itineraries of Rocca di Cerere UNESCO Global Geopark.** Mother Nature’s major colours: yellow, green and blue, the colours of natural products and features in the landscape, inspired the Travel Experience itineraries of Rocca di Cerere UNESCO Global Geopark. Yellow, the colour of wheat and saffron, is a symbol of opulence associated with agriculture and of sulphur associated with mining in the territory. Green is related to the

richness of the Geopark’s natural features and is linked with the concept of sustainable tourism. Finally, blue represents the rivers, lakes and botanical gardens located in the Geopark.

**The tourism experience, activities and outdoor sports.** The main concept is to provide tourists with a physical experience in discovering the cultural landscape of the Geopark but also to achieve the benefits of mindfulness. The tourism experiences include activities related to slow mobility such as trekking across the geological and natural sites such as the “Floristella Mining Park” and the old mountain railway of Assoro.

**A concept of sustainable and competitive tourism.** Sustainable geo-tourism is deserving of support because it promotes and, at the same time, preserves the Geopark and its cultural heritage. It provides full immersion into our planet’s wonderful natural phenomena.

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The yellow, green and blue itineraries in the Rocca di Cerere UNESCO Global Geopark.

### The roots of the Mediterranean Sea

Geoturistic experiences in the Rocca di Cerere UNESCO Global Geopark

**Yellow Itinerary**

It is the colour of wheat, symbol of opulence and of the strong agricultural connotation of the area. It is the colour of saffron used to perfume, cure, shade and flavour recipes; it is the colour of the oil that is used for flavouring the food, for cleaning and hygiene, for messages, for ornaments and cosmetics. It is the colour of the wine grapes, called ‘Sicilian’, packed to accompany its maturation and to enhance its characteristic fragrance; it is the colour of honey, considered the ‘food of the gods’ for its antiseptic and antioxidant properties. You will learn about the places of the Myth, you will reap the fruits of the earth, learn about the art of honey, cheese production and bread leavening, visit mines and enchanting places.

**Green Itinerary**

It is the colour of agriculture and local products that rich in sustainable qualities and nutraceutical properties already known to the ancient inhabitants. It is the colour of the natural reserves like ‘Monte Albusino’, one of the orographic vertices of the Erei mountains and which is visible from most of the central areas of Sicily; is the colour of barley and wheat cultivation. You can explore the old route of transhumance accompanied by animals, visit farms and participate in workshops with the best products of the earth.

**Blue Itinerary**

It is the colour of water, it is life; it is the colour of the rivers that feed the mills, the colour of the monumental fountains and the botanical gardens. It is the colour of the lakes that offer sports activities such as fishing, canoeing, sailing and surfing. It is the colour of life that makes plants grow whose legumes and quality fruits grow. It is the colour for the care of the sport and the wellbeing of the body in private baths that flourish in country villas and where you can satisfy the pleasures of the body in a context of confidentiality. You will be able to take the routes of the water and the mines, go to the main lakes and practice sports, ride a bike or go trekking along ancient railways, learn about the places where legumes and the peach of Leonforte grow, share the experience and the day life of local farmers.

Enna

personal promotional use:

## Adamello Brenta UNESCO Global Geopark, Italy Tourists become ParKeepers in the Adamello Brenta UNESCO Global Geopark!



A new project was born in 2020 in the Adamello Brenta UNESCO Global Geopark. The goal is to stimulate the spirit of belonging in the local communities and in tourists who are most loyal to the territory of the Geopark. The project is called, "ParKeeper" and was conceived with the help of the team of entrepreneurs who manage accommodation facilities certified by the "European Charter of Sustainable Tourism – Quality Park" (a long standing project which, since 2003, rewards the most environmentally conscious local organizations with the Adamello Brenta Geopark Quality Brand ).

Adult guests, who stay at least four nights in the "CETS - Quality Park" facilities, are enrolled in the register of Geopark custodians, receive a special identity card and thus become citizens of the Geopark with all related rights and responsibilities. The rights provide the possibility to take advantage of many discounts and benefits offered by the Geopark

services. These include using, the shuttle buses in the main valleys, the parking ticket, the purchase of publications and Geopark products and any innovation proposed by the Geopark, from year to year. Also, entitlement for priority booking at certain times of the year, the opportunity to participate in exclusive initiatives and the right to be regularly informed about the Geopark's news. Moreover, when the guest has stayed at least three times in a certified facility over the a period of two years, or if the guest has stayed at least twice in a certified facility and has visited one of our Park Visitor Centres, he/she will receive a special gift from the Park.

The responsibilities are very undemanding for those who already have an understanding of nature and conform with accepted environmentally friendly behaviour, both on vacation and at home. Among the best practices, the Geopark suggests, for example, to use public transport for daily travel, to recover waste, to sort waste even on vacation and to choose local products. Among the requests, there is also that of contributing to the promotion of the area by posting beautiful holiday photographs on social networks! In short, the aim of the project is not to make our guests feel like "accidental tourists" but to make them feel part of a community that considers the environment as an asset to be defended.

Due to the Covid-19 health emergency, 2020 was not an easy year for tourism, but the ParKeeper project gave us an encouraging direction. This summer, in fact, we have already awarded the first two "ParKeepers". We hope this is the beginning of a good synergy for the protection of the environment, which is needed in this historical moment!

The flyer for the "ParKeeper" project.

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The first ParKeepers. Laura Bacchini and Jonathan Giancarli who have stayed three times at the B&B "Sotto al Bosco" in Spiazzo in Rendena Valley.



## Sesia Val Grande UNESCO Global Geopark, Italy The Via GeoAlpina: geotrekking for sustainable development



A view of Lake Maggiore in the Sessia Val Grande UGGP.



Section of the Pian Vada' trail, Sessia Val Grande UGGP.

The Sesia Val Grande UNESCO Global Geopark recently completed a section of the Via GeoAlpina, an international project, launched by the International Union for Geological Sciences (IUGS) and UNESCO in the context of the International Year for the Planet Earth (IYPE, 2007), that aims to inform tourists and hikers about the history of the formation of the Alps.

Various organizations from six alpine countries (Germany, Austria, France, Italy, Slovenia and Switzerland) were associated with the project ([www.viageoalpina.eu](http://www.viageoalpina.eu)), that developed several itineraries crossing all the countries in the Alpine chain.

The section of the Via GeoAlpina (VGA) of the Sesia Val Grande UGGP involves a seven day itinerary that crosses the most significant components in the geology and landscape, guiding people to some of the most notable and attractive natural and cultural sites.

In the Geopark the VGA runs alongside the Insubric (Canavese) Line and includes significant parts of the Ivrea-Verbano Zone and the Serie dei Laghi.

View of the mountains from the Pian Cavallone trail.



The Ivrea-Verbano Zone provides one of the most spectacular sections through rocks of lower crustal provenance. Stages 1 and 6, for example, provide hikers with the opportunity to "walk through" the Earth's continental crust, observing the mineralogy, textures and structures formed at different depths.

In Stage 3 the trail follows the Sutermeister Trail, the path of historical forest exploitation, principally located among the metamorphic rocks of the geological unit known as the Strona-Ceneri Zone. It consists of two types of paragneiss, metamorphic rocks of sedimentary origin; Gneiss Minuti and Gneiss Ceneri both deposited during the Cambrian period.

All the stages with rocky outcrops along geotrekking trails and with a variety of rock types provide an opportunity to understand concepts such as geodiversity and geoheritage. Three of the seven stages have a more detailed plan of the trails with information and interpretive panels that describe in detail the geological, lithological, mineralogical and geomorphological features. Each of these thematic trails can be traveled separately by multiple users for educational and training activities.

At the same time each stage provides an opportunity to integrate the landscape, biodiversity, ecology and culture in the Geopark's activities for sustainable development.

This approach to valorise specific resources within Geoparks, through the use of tools, such as geotrekking trails, could improve and integrate our activities in geodiversity and geoheritage for geotourism and sustainable development.

More specifically the Via GeoAlpina trails in the Sesia Val Grande UGGP seek to develop and disseminate knowledge of the Earth sciences. As hikers and tourists walk along a way marked trail they are informed, in a scientific way, about the history of the formation of the Alps and the secrets of our planet.

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# Basque Coast UNESCO Global Geopark, Spain

## The Basque Coast Geopark celebrates its 10th anniversary



Restoration work on the Hiru Anai boat.

In 2020 the Basque Coast Geopark celebrates 10 years since it joined the European and Global Geoparks Network. It was on the 1st of October, 2010 when the Coordination Committee of the European Geoparks Network held in Lesvos (Greece) accepted the candidacy of the Basque Coast Geopark.

The last ten years have been an exciting journey, everything achieved was due to the work of many people. Looking back, we realize how proud we can be about the achievements of our Geopark. Great strides have been taken in many topics, conservation, tourism, education and we have attained a significant credibility at international level.

The Geopark wished to celebrate all of this with the real protagonists, the local people. Therefore, an event called "Festival of Maritime Heritage: Hiru Anai Boat, a Century of Live History", was organized during three weekends in October in Zumaia, Deba and Mutriku.

The three municipalities of the Geopark are situated on the coast and have a strong relationship with the sea. Old shipyards, whale hunting, and commercial activity in their ports have generated a rich maritime heritage deeply embedded in the local people's way of living and their unwritten traditions.

The maritime festival provided a breath of fresh air in the middle of the Covid - 19 pandemic. Respecting all precautionary measures, the visitors could experi-

ence live the restoration work on the wooden boat 'Hiru Anai'. Other activities included sailing in a traditional boat, an exhibition of old tools used by sailors, guided tours and workshops in tying sea knots and hook making were part of the programme.

The event was very successful, not just for the number of visitors, limited because of the pandemic, but for the participation and the engagement of the local people. The sea and the maritime heritage are another strong feature in the communal structure of the Geopark and provides a focal point for the future strategy of the Geopark. The restoration and enhancement of the cultural heritage is a challenge that we will face in the coming years.

One decade later, the future of the Basque Coast Geopark is secured thanks to the support of the institutions, the citizens and the visitors. Conservation, education and geotourism have been the pillars of the Geopark's strategy, always working for the sustainable local development of the municipalities that make up the Geopark. The work carried out over these ten years has led to excellent results and promises an exciting future.

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Sailing on a traditional boat.



Exhibition of old tools used by sailors.



# Beaujolais UNESCO Global Geopark, France

## Seducing local travellers - from digital tours to micro-adventures



The view from Chiroubles' geosite.  
 © Gaël Fontaine.

Covid-19 can be regarded as an accelerator for trends and thoughts. While half of the planet was locked down, digital platforms became vital for maintaining social interactions and satisfying our need to learn and discover. Then, with the arrival of the summer holidays people wanted to join with loved ones in nature. To face this challenge, the Beaujolais UGGp produced podcasts during the quarantine period to invite listeners to join in audio tours. Then, micro-adventures were launched for the summer to introduce local visitors to hikes, local producers and products and to geological information by inviting them to discover places they thought they knew in a new way.

A podcast screenshot on the Beaujolais UGGp Youtube page. © "Beaujolais Géoparc mondial UNESCO" Youtube channel.

During lockdown, the impossibility of organizing visits to sites in the Beaujolais Geopark led to the development of new media products. Many public and private institutes, teachers and enthusiasts have been very imaginative in providing scientific information. Following the example of the "caillou confiné" channel, many videos were published on online platforms. In response, the Beaujolais Geopark decided to publish podcasts about geosites. Podcasts were developed with the help of



local guides. Geosites are categorized into three groups: "geological sites", "natural sites" and "cultural and historical sites". The approach to geosites is strongly influenced by these categories. Each podcast is an invitation to travel. It offers a short story to listen to at home or on site.

Then, when summer came, the Beaujolais UGGp designed and released 15 micro-adventures highlighting geosites, telling short stories about our 500 million years geological history. The micro-adventure concept was popularized by Alastair Humphreys - voted Adventurer of the Year 2012 by The National Geographic. It is based on a simple idea: to discover your adventurous spirit a few kilometres from home. A micro-adventure should be short, easy to achieve, involve using public transport, hiking or biking, buying local products and reducing waste. In the Beaujolais, each micro-adventure involves a geosite, information about its geology, an easy, medium or difficult hike of 1 to 7 hours and an invitation to visit local producers and people involved in producing handicrafts. To communicate 15 micro-adventures, the Beaujolais UGGp publicized each Thursday, from July to October, a new micro-adventure on Facebook and on its website. The next step will be to include all the micro-adventures in a guide, providing more information about geology, best responsible practices for visitors and a list of restaurants using local products.

The epidemic increased visitors' interest in responsible tourism, well-being, local economies, education and low-carbon emission. Geoparks provide effective help in meeting these expectations considering their values and philosophy. Consequently, Covid-19 did not change our Geopark's approach or action plan but it accelerated some actions that focused on geotourism and local visitors.

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Sample of Chiroubles' micro-adventure.  
 © Beaujolais UGGp.



## Catalunya Central UNESCO Global Geopark, Spain

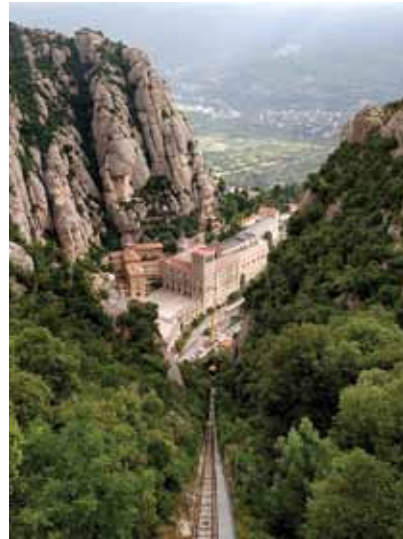
# Montserrat, a reference point for promoting the Catalunya Central Geopark to millions of people



## Bergstraße-Odenwald UNESCO Global Geopark, Germany

# Involving local communities - geodata management and Global Agenda 2030 platform

Montserrat, with more than three million visitors each year, is the gateway to the Catalunya Central UGGp and also, thanks to various activities in 2020, a privileged space to know and learn about nature, geology, history and culture in the territory. Despite the difficulties caused by the COVID-19 pandemic, significant services for geotourism were inaugurated in the Montserrat Mountain Natural Park. They aim to inform and enrich the experiences of all the people who visit this mountain. The Geopark promoted the development of these services with the support and collaboration of the Montserrat Mountain Natural Park and funding from the Generalitat de Catalunya Railways (FGC), who made a strong commitment to link the mountain's tourism provision with the story of the Geopark.



The stunning panorama of the Abbey of Montserrat and the characteristic saw-shaped conglomerates from the viewpoint at the Visitors Centre in the upper station of the Saint Joan Funicular.

Despite the difficulties arising from the current situation. It is also necessary to highlight the involvement of FGC, which also plans to adapt the Santa Cova Museum space so that it becomes another key site for information and interpretation about the Geopark and the Natural Park.

The Geopark also installed new information and interpretation panels at different sites within the Montserrat Natural Park, which help to interpret the geology and to learn the history of the mountain and the surrounding territory. Panels are installed at strategic sites, with information in four languages for the visiting public. One information panel, at the starting point of a popular trail to the Monastery provides information about the route with a link to a virtual leaflet explaining the geological features and the historical and cultural relevance of the site.

Interpretation panels include information on natural history (flora and fauna) and on the cultural and historical values of the Natural Park. They help to interpret the evolution of the geological landscape from the Santa Cecília vantage point, and the erosive effect of rivers in the Llobregat Gorge from the Sant Miquel vantage point.

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Interpretative panel at the exceptional Santa Cecília viewpoint. An excellent site to explain the changing landscape through geological time.



Example of one of the audiovisual facilities and an information panel in the new Visitors Centre in the upper station of the Saint Joan Funicular.



Our work force team documents new infrastructure and monitors existing elements on a regular basis.



on our live-action dashboard and triggers a repair assignment. This gives our staff more time for new projects without affecting our quality standards and monitoring duties.

But we did not stop there. Our geodatabase serves as the basis for informing and involving our local communities. Mountain bike riders visit our digital trail platform to find the perfect route that caters for their needs, whether it is a family tour or an adrenaline inducing "Enduro-ride". Smartphone apps enable people to gather data by themselves and provide us/ them with a bigger picture of our region. From damage watch to involvement in citizen science projects tackling climate change, geodata is changing the way we interact and communicate with our residents. It provides a powerful alliance for a digital future.

This culminates in our newest project, the cartographic Global Agenda 2030 platform for our local communities and counties. Starting from a comprehensive overview in the visually appealing map we displayed actions, projects and ideas from our member communities that support the Sustainable Development Goals (SDG) 2030. The map layout makes it easy for residents to find activities and projects in close proximity to their location and a search function lets them filter through all 17 SDGs. The sustainability platform also provides a forum to establish synergies for communities which work in similar projects and promotes interregional activities.

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Even if you are not aware of it right now, geodata forms the foundation of many endeavours in your organization. It is a pool of information that can help streamline new projects and monitor the results of earlier projects. Here in Bergstraße-Odenwald UNESCO Global Geopark we oversee hundreds of hiking-paths, mountain-bike-trails and information-points, which are distributed throughout our territory. It's easy to lose track and that's why we implemented our own geodatabase. Every part of the infrastructure we put in place is registered with information concerning its exact location, photos, status and the last quality inspection. Damaged infrastructure appears



Member communities are represented on the interactive map and can be selected by choosing the SDG of interest

## Cilento, Vallo Di Diano and Alburni UNESCO Global Geopark, Italy

### Best practices for sustainable development in Cilento, Vallo Di Diano and Alburni UGGp: the GeoPark brand and Mediterranean Diet taste network



Companies receiving the GeoPark brand award.

Cilento, Vallo di Diano and Alburni Geopark UGGp (CVDA UGGp) adopted the best practices for sustainable development in a multi designation territory, through several activities. To this end, it was essential to reward and encourage the productive activities of the territory with a recognition of quality. Two initiatives that proved very successful are: the GeoPark brand and the Mediterranean Diet taste network.

On 26 April 201, the Governing Council of the Park Authority adopted the specification for the franchise for the GeoPark brand of the National Park of Cilento Vallo Di Diano and Alburni UGGp. The brand will help to safeguard the traditional

A woman making pasta "Cavatelli".



Typical dishes of the Mediterranean diet.

heritage and distinctive local products and crafts. It will also encourage conformity in the quality of the products and services and ensure that production and delivery comply with the requirement for conservation in the territory.

The aim of this brand is to promote and support the following: production activities and services; the environmental, social and economic quality of the resources and production processes of the area; traditional heritage, typical products and local handicrafts. The local businesses and services are encouraged to develop a clear territorial identity in marketing and highlighting the origin of the products by promoting services, entrepreneurship and creating local employment. The Geopark has awarded 140 companies and 200 typical productions/local handicrafts with the brand of National Park CVDA UGGp

The Mediterranean Diet taste network, aims to create a link between producers and the catering sector in order to provide the consumer with a complete overview of the choice and short supply chain for delivery of products made in the Geopark. These are the typical and traditional products of a territory known for its rich biodiversity heritage and as a cradle of the Mediterranean Diet. To join the taste network, every restaurateur must include at least 10 GeoPark brand products on their menu. Thirty restaurateurs have joined the Mediterranean Diet taste network.

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## Troodos UNESCO Global Geopark, Cyprus

### The restoration of mining heritage sites as a powerful tool for geotourism: A case study of the historical Asbestos Mine that became a model for future restoration projects in Cyprus.

Airborne pollution with asbestos fibers occurred until the 1970s without any safety precautions. Inset map of the Troodos UNESCO Global Geopark with the location of the Asbestos Mine.



The Asbestos Mine is located in the heart of the Troodos UNESCO Global Geopark and is the biggest chrysotile asbestos mine in Europe, covering an area of 4.7 km<sup>2</sup>.

The production of asbestos in an organized way began at the site in 1904. Until 1950, the extraction of the ore was carried out by hand during the summer months using explosives, pick-axes, pitchforks, metal troughs and manually pushed wagons. Consequently, the operation of the mine, was dependent on the employment of a large number of workers, that at times involved a workforce of 18,000. Many lived with their families close to the mine, in temporary buildings, which gradually developed into permanent houses, and the creation of the Pano Amiantos community. After 1950, the mechanization of the mine led to a decrease in the number of employees. However, the community continued to provide homes for mine workers and officials. In addition to houses the community included a church, a school, a hospital, a cinema, a police station and shops.

General view of the mine-waste dumps before the restoration work.

(Source: Geological Survey Department)



and the drainage systems of the wider area with asbestos fibers. These conditions forced the people in the nearby villages to live under adverse conditions for a prolonged period of time.

The international campaign against the use of asbestos, resulted in a decrease in the demand and price of asbestos. Consequently, the mine began to experience financial difficulties, which eventually resulted in its closure in 1988. The Government terminated the mining lease in 1992 and undertook the management of the mine. The restoration of the mine started in 1994 under the guidance of a multidisciplinary technical committee, aiming to address the stability problem by reforesting the mine-waste tips and renovating abandoned buildings. The annual budget for the restoration of the mine is around €500,000.

According to recent studies and annual testing for airborne asbestos fibers, the restoration work, after nearly 25 years, has reduced their dispersion down to environmentally acceptable levels in the area surrounding the mine.

Today, the Asbestos Mine area is reforested, hosting in renovated buildings a seed bank for endemic flora species, the Troodos Geopark Visitors Centre, the Botanical Garden and an artificial lake bounded by a natural trail which attract thousands of visitors each year. The safe conditions and the increased number of visitors have a positive effect on the local communities helping them to sustain their activities in the land of their ancestors.

Thus, the experience gained from the successful restoration of the Asbestos Mine, has been adopted for restoration work in numerous abandoned mines in Cyprus.

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General view of the Asbestos mine in 2017. (Source: Manos Manoli)



## Luberon UNESCO Global Geopark, France Luberon Gratitude, an initiative from geopartners and tourism professionals from the Luberon UNESCO Global Geopark to thank the pandemic frontline workers



The health crisis marked by the Covid-19 pandemic was particularly trying for the health professionals during the lockdown period. Frontline workers including nurses, doctors, pharmacists along with police officers, officials, waste collectors and others have been mobilized tirelessly to take care of the sick and serve the community.

The Luberon Gratitude initiative involves a network of geo-partners, tourist providers and winemakers from the Luberon Régional Nature Park and the management structure of the Luberon



Covid-19 care providers enjoy an overnight stay in the Charembau Hotel.

UNESCO Global Geopark who wish to demonstrate solidarity with the frontline workers. This network, with the support of the Luberon UGGp, proposes services, products and opportunities to explore the exceptional richness of the territory natural and cultural heritage.

Luberon Gratitude offers 500 overnight stays in hotels, campsites or B&Bs, guided hikes, site visits, tasting wine and local products, free of charge or at preferential prices from July to December 2020. To date, 173 requests have been reported showing a high participation rate for the most popular offers.

The Luberon Gratitude project provides opportunities and precious time for sharing values and experiences between professionals committed to the common causes: people's health and well-being, appreciation and enjoyment of the natural heritage and creating a caring world with greater solidarity.

Here is the testimony of Souria Hamida from the Laveran Hôpital d'Instruction des Armées in Marseille:

"I want to thank you for your initiative to provide rest for the Covid caregivers in association with the Parc du Luberon.

I spent a weekend at the Hotel Charembau where everything was perfect: from the welcome to the breakfast, not to mention the exceptional setting and the great sympathy of the owner.

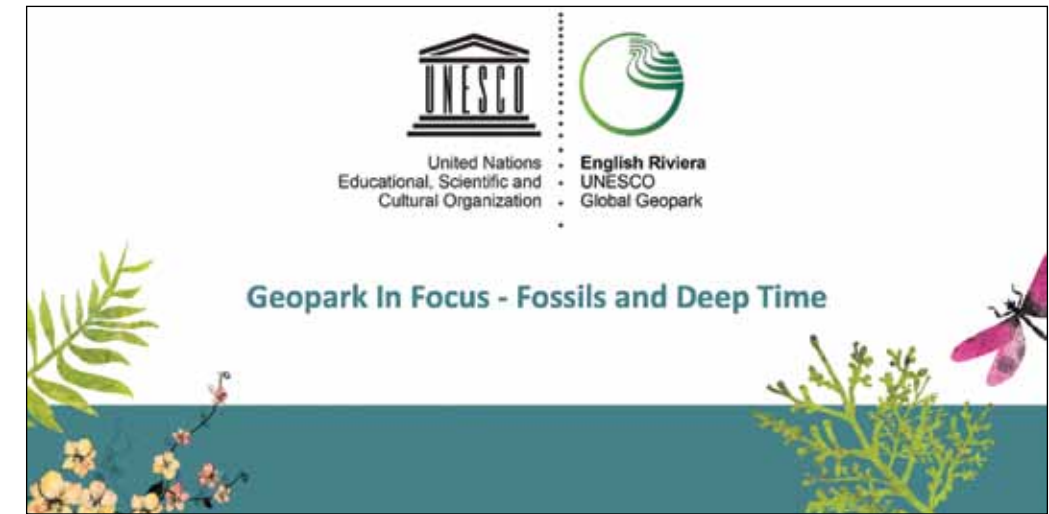
"Many thanks".

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**View of the Charembau Hotel Forcalquier, Alpes-de-Haute-Provence, France. One of the hotels in which the Luberon Gratitude initiative offers overnight stays.**



## English Riviera UNESCO Global Geopark, UK The Geopark In Focus



**BBC TV geologist and Geopark Patron Prof Iain Stewart hosts the Geopark In Focus Interviews.**



The English Riviera UNESCO Global Geopark has launched a series of video-interviews with world leading scientists and experts to unravel the facts behind Torbay's UNESCO designation. Over seven episodes, Prof Iain Stewart MBE, engages in relaxed discussions with fascinating people, each with a different insight into why this coastal area of England is so unique. From what the local rocks reveal about Earth's history and climate change, evidence of early human cultures, to how the landscape and communities of Torbay have influenced writers and artists, the series give people of all ages and abilities the opportunity to experience Devon's UNESCO Global Geopark.

The series was launched on UNESCO World Science Day for Peace and Development and each episode is released weekly during the Autumn starting with Fos-

sils and Deep Time, followed by Caves, Early Humans, Today's Inspiration, Sea Level and Climate Change, Writers of the Riviera and Marine Life of The Bay.

BBC TV's favourite geologist and series host Professor Iain Stewart, patron of the Geopark since 2007 said "These films are a wonderful way for people to reconnect with the amazing natural environment that surrounds us down on the English Riviera coast - an environment that infuses our daily lives and enriches our economic, social and cultural well-being. They are full of brilliant stories - past, present and future - that speak to the vital modern importance of Torbay's ancient geological heritage".

You can watch each episode as they are released on the Geopark's YouTube channel, or listen to podcast versions, and get inspired just as Professor Chris Stringer of The Natural History Museum London, and one of the leading experts in human evolution did. Chris said "I first visited Kent's Cavern as a 5-year-old, with my parents, and it helped to spark my life-long interest in prehistory. I'm delighted to have this chance to show how Kent's Cavern, as part of the English Riviera UNESCO Global Geopark, is continuing to inform both scientists and the public about our ancient past and why that is still relevant to us today."

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**Iain Stewart discussing Early Humans with Prof Chris Stringer and Prof Paul Pettit in Geopark In Focus Episode 3.**



Geopark In Focus, Episode 1 - Fossils and Deep Time.

## Karavanke/Karawanken UNESCO Global Geopark, Slovenia–Austria

GEOPARKKARAVANKEJKARAWANKEN  
 Skrivnosti zaplane v kamninah  
 In Stein geschriebene Geheimnisse



# Olimpline - new adrenaline attraction in the Karavanke/Karawanken UNESCO Global Geopark

Karavanke/Karawanken UNESCO Global Geopark, a cross-border Geopark between Slovenia and Austria, comprises 14 municipalities, 9 on the Austrian side and 5 on the Slovenian side. One of its most important objectives is for wide-ranging cross-border cooperation and the development of the region within a sustainable regional policy. Therefore, several international projects are currently being implemented in the Geopark. One of these is an INTERREG SI-AT project called "NatureGame" (Natural-geological Playground Petzen), was started in 2018 and was co-financed by the European Union, through the European Regional Development Fund, and Land Kärnten. The project aims to strengthen the awareness of nature through a combination of attractive outdoor activities as well as geo-experiences. Its main goal is the sustainable and economic valorisation of the geo- and biodiversity of the central cross-border Petzen Mountain and surrounding area and thus the Karavanke/Karawanken Geopark.

Within the framework of the NatureGame project several attractive touristic offers on both sides of the border are being created. Recently the Olimpline, one of the longest ziplines in Europe was launched in Črna na Koroškem (Slovenia). Olimpline is the longest continuous zipline in Slovenia, with the highest point 200 m above the ground and a length of 1260 m. Along this zipline, which is a tribute to local successful Olympians, visitors can enjoy a stunning view of the birthplace of the former Alpine skiing champion, Tina Maze, and other Olympic athletes. Several interpretation/information panels at the starting platform present the rich geo- and biodiversity of the Geopark area. Here, visitors are informed about the "most exciting" event in the geological history of the Karavanke/Karawanken UNESCO Global Geopark when - about 70 million years ago - the Eurasian and Adriatic lithospheric plates collided, and the famous Periadriatic Fault Zone formed as a consequence of the collision.

In addition to Olimpline, several other tourist attractions are developed within the NatureGame project, e. g., a new Geopark Visitor Centre, an out-



door climbing tower, an indoor climbing centre together with some new interactive-information points. A network of tourist attractions will form a bilateral game, the so-called NatureGame, consisting of several closely interlinked modules, where individuals will be able to experience the geo- and biodiversity of the cross-border region and, at the same time, interact with nature. Three different levels of the game will be developed. While the first level will be available on PCs, also for marketing, the second can only be used directly in the Karavanke/Karawanken Geopark. The last, the third level is intended to encourage participants to reflect on the significance of geodiversity and biodiversity while playing the game. The provision of adventurous activities to encourage the experience of geodiversity and the environment in a playful way will emphasize the importance of the Karavanke/Karawanken UNESCO Global Geopark and will lead to an increase in tourism and overnight stays.

**Olimpline - a new adrenaline adventure in the Karavanke/Karawanken UNESCO Global Geopark.**

Photo by Urosh Grabner.

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The underground Geopark Information Centre Podzemlje Pece/Petzen in Mežica, Slovenia, with a new interactive-information component.

Photo by Urosh Grabner.



The new Geopark interactive-information point in Prevalje, Slovenia



# UNESCO designates 15 new Geoparks in Asia, Europe, and Latin America

UNESCO's Executive Board last July approved the designation of 15 new UNESCO Global Geoparks, which brings the number of sites participating in the Global Geoparks Network to 161 in 44 countries. The Executive Board also approved the extension of the Kula-Salihli UNESCO Global Geopark in Turkey.

UNESCO Global Geoparks were designated for the first time in Nicaragua, the Russian Federation and Serbia.

The newly designated Geoparks are:

## Cliffs of Fundy UNESCO Global Geopark (Canada)

On the North shore of the Minas Basin in Nova Scotia, Canada, the Geopark features a varied landscape of hills, mountains, valleys, heavily forested areas, and coastal marshlands. Its broad biodiversity includes rare birds, fungi and plants. Minas Basin, an inlet in the Bay of Fundy, which is known for having the highest tides on Earth, is part of the Geopark that features exposures of the Central Atlantic Magmatic Province, the largest outpouring of lava in Earth history, fossils of early dinosaurs, vertebrates and more. The indigenous people of the region, The Mi'kmaq, have lived in the area for thousands of years, making it one of the earliest known sites of human habitation in northeastern North America. Passed down through the ages, their stories explain many geosites and the communities of Cliffs of Fundy are committed to preserving them for future generations.



## Discovery UNESCO Global Geopark (Canada)

Located in Newfoundland Labrador, in the east of the country, the Geopark covers over 280 km of rugged coastline full of remarkable views of caves, arches and sea stacks. Sites within the boundary of the Geopark bear witness to the region's geological history which has shaped the land, its human inhabitants and their culture. The area lies entirely within the Avalon terrane of the Appalachian Orogen, which is dominated by a complex assemblage of Neoproterozoic sedimentary, volcanic and plutonic rocks. The coastal geology offers a unique opportunity to observe, study, and celebrate one of the most significant transitions in Earth's history: the Ediacaran Period, and its associated rise of animal life. With rocks over a half a billion years old, the Geopark is host to some of the most spectacular and exceptionally preserved Ediacaran fossil sites on Earth.



## Xiangxi UNESCO Global Geopark (China)

In the hinterland of the Wuling Mountains in Xiangxi Tujia and Miao Autonomous Prefecture (Hunan Province), the Geopark bears witness to a rich human history starting in the Palaeolithic age and features 160 cultural sites from the Palaeolithic and Neolithic ages. The area is now mainly inhabited by Tujia and Miao ethnic minorities, the earliest indigenous people living in Xiangxi Prefecture, whose rich history and culture have given rise to unique folk customs. The geology of the area records the forming of the Yangtze Platform, a foreland basin that has undergone multiple stages of tectonic evolution. In the Geopark, the Cambrian system is particularly visible, with two sites of high international importance. The area is also known for its Red Stone Forest, the Dehang Grand Canyon, the Zuolong Valley, and many spectacular waterfalls.



### Zhangye UNESCO Global Geopark (China)

The Geopark is located in Zhangye City, Gansu Province, which was an important township on the ancient Silk Road, trade route between China and the West. The Geopark's 577 cultural sites bear witness to the history of the city that is home to a number of minority ethnic groups, including Yugurs, with distinct cultures and lifestyles. The most notable feature of the Geopark is the presence of colourful hills, the best example of China's Danxia landform, formed by folded sandstones in different colours. Some of the hills have been eroded creating 'window-lattice' and 'palace-style' landforms. Another important feature is the 'Nine-Springs' ophiolite, a remnant of the ancient oceanic crust, which has been studied by multiple geologists for its international geological significance.



### Toba Caldera UNESCO Global Geopark (Indonesia)

Located on Sumatra Island, Toba Caldera was formed by a super volcanic eruption 74,000 years ago. The water-filled basin of the caldera is the largest volcanic lake in Indonesia and is situated 904 metres above sea level. The large Samosir Island rises up from the lake set amidst wave hills, mountains and plains. The creation of the caldera exposed basement rocks, enabling scientists to study what was once part of the mega continent Gondwana. Home to the Batak Toba, Simalungun, Karo and Pakpak people, the area has a rich cultural heritage which can be explored by visiting traditional houses and museums in the Geopark.

### Rio Coco UNESCO Global Geopark (Nicaragua)

Located in the north of Nicaragua, Rio Coco is part of the volcanic Central Mountainous Chain featuring a landscape of rolling hills and plains with small valleys. The elevated and broken topography of the area offers lookout points and panoramic views of a range of ongoing tectonic phenomena, in a landscape of wetlands, highland springs and cloud forests. The territory is home to three emblematic trees: the almond tree of 'Tere Armijo', the Branded Guapino tree, and the 500-year-old Golden Ceiba, sacred for the Mayan people. The area has a rich history, marked by Taguzgalpa heritage, with numerous pre-Hispanic settlements and a few examples of cave art. Spanish conquistadors, established the Cuje gold mines in Rio Coco and built the parish church of Santa Maria de Magdalena in Totogalpa (18th and 19th centuries).



### Hantangang UNESCO Global Geopark (Republic of Korea)

Situated in the central part of the Korean Peninsula, the Geopark features a unique volcanic landscape of deep gorges, basalt cliffs, columnar joints and waterfalls formed during the late Quaternary, after the eruption of Ori Mountain, which unleashed a lava flow between parallel mountain ranges along the old Hantangang River Valley, creating the Cheorwon Lava Plateau. Hantangang River subsequently eroded a new path through the lava plateau, developing its unique volcanic topography. The area's wealth of cultural and archaeological sites including Jeongok-ri, which dates back to the Stone Age, testifies to its strategic importance for trade and war.



### Yangan-Tau UNESCO Global Geopark (Russian Federation)

Located in the Salavat District in the north-east of the Republic of Bashkortostan, the area is known for the rich diversity of its geology, flora and fauna, as well as cultural traditions. Three major geological structures account for the Geopark's varied landscape: the East European Platform, the Uralian Foredeep and the Ural Mountains. One of the outstanding geological features of the Geopark is the Yangantau Mountain with unique thermal anomalies, creating geothermal springs without the presence of magmatic activity. Other notable features include lowland peat-bogs, karst caves, the Kurganzak spring, Keselyaroyo sulfur springs and the Mechetlino section.

### Maestrazgo UNESCO Global Geopark (Spain)

In the province of Teruel, within the Aragonese western branch of the Iberian Mountain Range, the Geopark's extensive territory encompasses 43 municipalities with beautiful towns and architectural heritage set in varied landscapes, home to a rich history and traditional celebrations. The two most notable geological highlights of the Geopark are: The Jurassic-Cretaceous dinosaur sites in Galve where the first dinosaur in Spain was found, and the Mesozoic series in the Maestrazgo area, one of the most representative and complete exposures of the Cretaceous geological history of the Iberian Mountain Range. Other remarkable sites include the Cristal Caves Natural Monument, El Recuenco cave, Cañizar del Olivar (Calcareous tuff building) and multiple dinosaur sites with fossils and footprints.

### Dak Nong UNESCO Global Geopark (Viet Nam)

Located in Dak Nong Province in the Central Highlands, the Geopark's geological past goes back 200 to 165 million years when the area was part of the ancient Gondwana supercontinent. More recent volcanic activity a few tens of thousands of years ago has endowed it with spectacular craters, majestic waterfalls and Southeast Asia's most extensive system of hundreds of magnificent volcanic caves. Its geological morphology and varied soil and climatic conditions, are home to a rich range in biodiversity and ecosystems, including many endemic rare species. Dak Nong was originally inhabited by three indigenous peoples, the M'Nong, Ma and Ede. Following an influx of immigrants in the late 1970s it has become the home of over 40 ethnic groups and a place of rich cultural diversity.

### Granada UNESCO Global Geopark (Spain)

Located in the south-west of the country and surrounded by some of the highest mountains of the Iberian Peninsula, the area contains evidence of the geological history of a river and a lake that were active in the Quaternary. It is marked by an extraordinary record of continental Quaternary sediments which eroded and formed valleys. These processes created a unique troglodytic landscape, with a singular type of traditional cave-houses, inhabited since the Middle Ages, which now house restaurants, tourist accommodation, interpretation centres, wine cellars, etc. The area is also known for its many archaeological sites that showcase the region's rich historical, artistic and cultural heritage.

The presentations of the following new UNESCO Global Geoparks can be found in the following pages:

- ▶ The Black Country UNESCO Global Geopark (United Kingdom)
- ▶ Djerdap UNESCO Global Geopark (Serbia)
- ▶ Lauhanvuori-Hämeenkangas UNESCO Global Geopark (Finland)
- ▶ Estrela UNESCO Global Geopark (Portugal)



## Black Country UNESCO Global Geopark, UK

# Introducing the Black Country UNESCO Global Geopark

**Black Country**  
UNESCO Global Geopark



The Geopark Team at the Geopark Headquarters, Dudley Museum

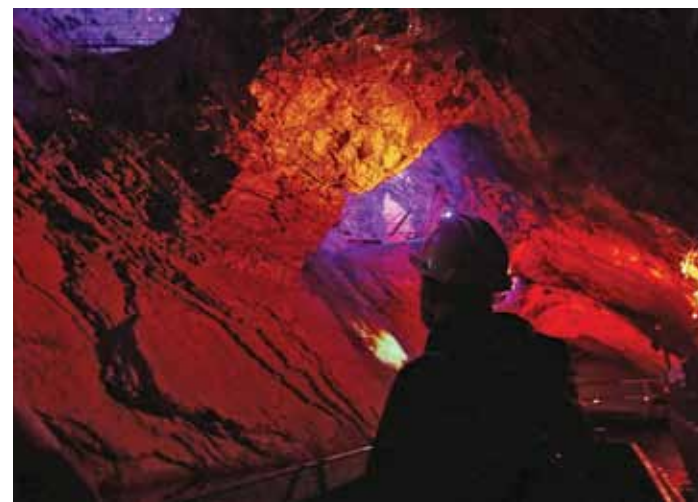
The Black Country, is a 365km<sup>2</sup> urban area in the centre of England with 1.1 million inhabitants. It sits on a coalfield that is exceptionally rich in easily-mined coal, ironstone, fireclay and limestone. The name comes from the blackening and wholesale destruction of the natural landscape by intensive coal mining and the spread of heavy industries during the Industrial Revolution. In 1868 American Consul Elihu Burritt described this place as a land 'black by day and red by night' It was a crucible of new ideas and inventions strongly associated with the history of geology and the development of geological concepts including the oldest geological map (Metallum Martis 1665), and the earliest recording seismograph (Milne-Shaw 1913).

The geology is very varied for a relatively small area. Sir Roderick Murchison, who identified the Silurian Period, said that "Nowhere in England are more Geological features brought together in a small compass than in the environs of Dudley or in which their characters have been more successfully developed by the labours of practical men". It is, however, possibly most famous for its beautifully preserved and diverse Silurian and Carboniferous fossils.

The oldest rocks are exposed in anticlinal inliers



A community field trip at Wrens Nest National Nature Reserve Geosite



The Singing Cavern Geosite in the Black Country UGGp.

of Silurian shallow marine strata with thin volcanic ash (bentonite) horizons. These folded strata rise through the overlying coalfield of upper Carboniferous, freshwater sedimentary rocks deposited in low-lying equatorial swamps. Later Carboniferous basaltic magma intruded the coalfield.

The area was pulled apart during the Permian and Triassic Periods and became a series of faulted inland desert basins filled with sandy red beds and red mudstones. The youngest strata include boulder clays and glaciofluvial deposits of sands and gravels from ice sheets of the Pleistocene that sculpted the landforms and were deposited across northern and western parts of the territory.

Geology defines everything here and imparts local character and distinctiveness. This rich "heritage seam" is being protected and sensitively developed. The importance and value of the heritage is recognised and protected in national and local planning controls and nature conservation law and policy. The Geopark's work is operated under these controls and authorised through its tiered management structure. At the top level it is chaired by senior politicians and Chief Officers of ABCA (the Association of Black Country Authorities). The next level is a board of specialists from a range of partners who coordinate, prioritize and oversee approved project works. Then there are delivery teams on the ground supported by the management levels who work with wider partnerships and stakeholders.

People are at the heart of the Geopark. The Geopark greatly raises awareness of the natural world and the environment and creates a great place to live, work and learn. This is expressed in a dynamic and diverse range of activity across the Geopark, including specialist advice to developers and planners, geological conservation and site management, recording and collecting from temporary geological exposures, educational projects, tourism initiatives, events, exhibitions and other promotional activity.

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## Djerdap UNESCO Global Geopark, Serbia

# "It is magnificent to stand on the banks of the Danube..."



Karst plateau Ploče overlooking the Danube - the most famous viewpoint in the Djerdap UGGp.

With these words of Pliny the Younger (61-113 AD) begins our story about the beautiful Danube gorge, now a new addition to the family of UNESCO Global Geoparks. Located in the Balkans, Djerdap Geopark is situated in the northeastern part of Serbia, where the Danube serves as a natural border with Romania. Outside of Serbia, Djerdap Gorge is known as the Iron Gates, in respective languages; however, the Serbian toponym derives from the Persian word for whirlpool - gerdâb. The Geopark covers an area of 1,330 km<sup>2</sup>, including the 638 km<sup>2</sup> Djerdap National Park, and has a total population of 41,153.

Neoproterozoic rocks, which constitute a significant portion of the Geopark, are represented by unfossiliferous medium to high-grade metamorphic rocks. The Palaeozoic Era is characterized by Cambrian volcanic-sedimentary rocks, Ordovician metaclastics, Carboniferous clastics and granitoids and Permian red sandstones and spilites (volcanic igneous rocks). One of the most important complexes, the Jurassic-Lower Cretaceous succession of limestones, marlstones and cherts, has a rich fossil fauna (ammonites, brachiopods, bivalves, belemnites) and hosts a well-developed karst landscape, especially in the Miroč Mountain. Neogene and Quaternary formations, with aeolian landforms, occur



The replica of the iconic Mesolithic sculpture from Lepenski Vir in the Visitor Centre of the Djerdap National Park.



The natural arch in Vratna Gorge. Natural arches and caves are distinctive karst landforms in the Djerdap UGGp.

mainly in the westernmost and easternmost lowlands. Our Geopark is very proud of its rich biodiversity. The deep River Danube has, in addition to large specimens of catfish and zander, around 60 fish species. The dense Djerdap forests are home to at least 55 mammal species, including deer, wild boar, fox, lynx and marten. High on the Danube's cliffs is a soaring kingdom of eagles and falcons. Because of the high diversity of the bird fauna, including rare and endangered species, Djerdap National Park and Mala Vrbica have been declared Important Bird and Biodiversity Areas. Also, Kladovo-Radujevac and Djerdap National Park, with some 1,100 plant species and subspecies, have been declared Important Plant Areas.

The very favorable microclimate gave rise to a permanent human presence over eleven millennia, and to the Geopark's numerous archaeological sites and historical and cultural monuments. Lepenski Vir is a unique prehistoric site, with settlements dating from Mesolithic and early Neolithic times. The prehistoric site Rudna Glava contains the earliest copper mining and metallurgy in Europe, dating back to 6000 BC. The area along the Danube was an important link between the western and eastern territories of the Roman Empire. During the 1st and 2nd century AD, the Roman emperors commissioned a strategic road through the Iron Gates with a series of military fortifications and a bridge over the Danube. Even now, Golubac and Fetislam Fortresses testify to the strategic importance of Djerdap and to clashes between East and West during the Middle Ages and early modern period.

The Djerdap Geopark is managed by the Public Enterprise "Djerdap National Park", in cooperation with four municipalities (Golubac, Majdanpek, Kladovo, Negotin) and the Ministry of Environmental Protection. We support an increasing number of projects, companies and individuals involving sustainable development, geotourism and the production of local food and craft products. With the support of experts from the universities, institutes and government departments, our persistent efforts in research, promoting sustainable development and the protection of Djerdap's rich heritage will proudly continue.

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# Estrela UNESCO Global Geopark, Portugal

## A New Portuguese UNESCO Global Geopark:

### Estrela - a mountain of resilience



The Zêzere glacial valley and the western plateau of the Serra da Estrela, with its glacial cirques, glacial troughs, hanging valleys and moraines.  
© Filipe Patrocínio.

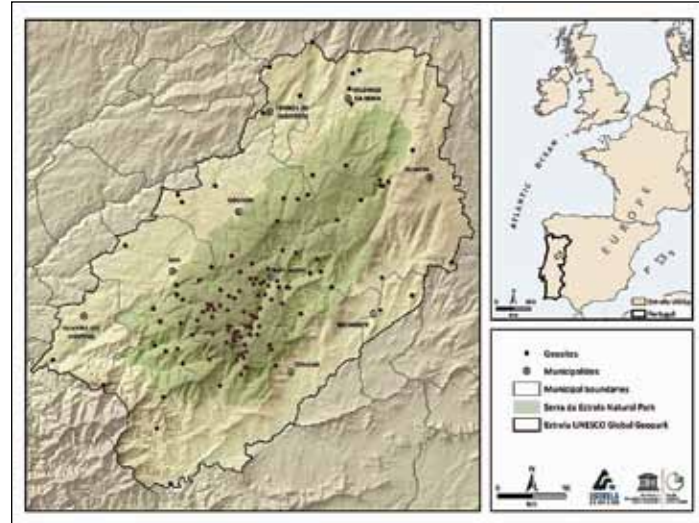
The Estrela UNESCO Global Geopark encompasses the highest mountain in mainland Portugal (Estrela, 1993 m) together with its bordering plateaus and foothills. The territory hosts the most significant Late Pleistocene glacial and periglacial landforms in Portugal and several internationally significant geosites. Besides its remarkable and diverse geology, the over 2,200 km<sup>2</sup> territory's long cultural evolution reflects the adaptation of its peoples to the adverse geography, and their intimate relationship with the mountain. Today, the Estrela Geopark has about 150,000 inhabitants and is an important tourist destination in Central Portugal.

Estrela's rich geological history started with marine sedimentation at over 650 million years (Ma) ago. From approximately 350 – 300 Ma continental collision associated with the Variscan Orogeny involved the intrusion of large granitic plutons and metamorphism, giving rise to the metasediments that outcrop in large areas of the territory and to the creation of a mountain belt. The levelling of the mountains by 250 Ma and a long period of stability terminated at about 20 Ma with the uplift and formation of the Iberian Central System and the Estrela Mountain. The rich geological heritage is represented by 124 geosites subdivided into the following categories: glacial and fluvioglacial; periglacial and slope dynamics; fluvial geomorphology; granite weathering landforms; hydrogeological; bedrock geology; mining; panoramic viewpoints.

Estrela is one of Iberia's major areas for endemic and restricted plant taxa and comprises almost one third of the Portuguese flora. It has approximately 40 mammal species, 150 bird species, 30 amphibian and



Linhares da Beira, one of the earliest settlements in the Estrela UGGp.  
© Filipe Patrocínio.



reptile species and a small number of fish species. Seven of the 2,500 invertebrates listed are endemic.

The strong connection between geology, geomorphology, climate, economic activity and human settlement produced the mosaic of cultural landscapes that enriches the Estrela UGGp, forming the legacy of the relationship between the Estrelean people - the Serranos and the mountain.

The Estrela UGGp is a new concept for a territory with a remarkable cultural heritage and where geoheritage supports a strategy for promoting well-being, while respecting the environment. Its core-objectives are: i. preserving the geological heritage, ii. educating the public about the Earth Sciences, iii. promoting sustainable development, iv. promoting the creation of multicultural links through partnerships, v. stimulating scientific research, and vi. promoting networking.

The Estrela UGGp defines itself as a territory for supporting science, education, culture and communication, capable of promoting strategies for valorisation and development, and ensuring the preservation of the geological and non-geological heritage. The geodiversity of the Estrela, the richness of its cultural heritage and the scenic character of its landscapes provide the territory with a unique geography. The structured approach of the Geopark's strategy will, in close partnership with the local population and enterprises, ensure the consolidation of the Estrela brand, and aims to mitigate the high environmental impact of tourism that frequently affects European mountains.

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**Estrela UNESCO Global Geopark and its geosites.**



# Lauhanvuori - Hämeenkanngas UNESCO Global Geopark, Finland

## From mountains to mires



A misty morning in Kauhaneva, one of the largest mires in Lauhanvuori - Hämeenkanngas Geopark.

The Lauhanvuori - Hämeenkanngas UNESCO Global Geopark combines three distinct geographical areas with 40,000 inhabitants and three different cultures. Located on the margin of Pirkanmaa, Satakunta and Ostrobothnia provinces, the Geopark created a new unity within the region. Despite their differences, the cultures have many common features with their roots in geography. For instance, the area is one of the few places where brewing sahti, the traditional Finnish farmhouse ale, has survived to this day.

The 4,900 km<sup>2</sup> Geopark area is located near the coast of the Bothnian Sea. Because of the relatively flat topography, water runoff is low, and the area has an abundance of mires. The area is part of the Suomenselkä watershed dividing the Lakeland and the Bothnian coastal plains. The main geosites include Lauhanvuori, Kivijata Stone Field, Hämeenkanngas Springs and Kauhaneva with its vast and varied mire scenery. Other sites of interest include the famous Susiluola Cave which was occupied before the last Ice Age and Aitoneva, the peat industry museum.

The bedrock consists of 1,900 million-year old granite, representing the deep roots of the Svecofennian mountain range. The area is part of the thickest Earth's crust in Europe. Lauhanvuori, the highest point on Finland's coast, is the remnant of a sandstone formation in the centre of the Geopark. It forms a gentle hill, retaining features of its history as a former island. The Hämeenkanngas ridge, is the last major deposit created at the margin of the retreating Weichselian glacier 10,800 years ago. Along with several granite hills, these geological landmarks rise above the flat



A guided tour visiting a beautiful bubbling spring in Lauhanvuori National Park.

lying land of mires, forests, and rural landscapes.

Today, mires are the wildest natural sites one can find in the area. They are the interface where biology meets geology with the production of biogenic sediments. Mires are a part of the rural landscapes and even of the industrial history. The best farmlands in the area were originally riverside mires and wetlands, and the peat energy industry in Finland is rooted within the Geopark. Mires are an inseparable part of Finnish culture— places of tranquillity, safe escapes in hard times, sources of iron, health, and vitamins, but also places for grief and sorrow.

The Geopark is managed by an association, whose members consist of local municipalities, businesses, and other stakeholders. An important landowner and partner, Metsähallitus Parks and Wildlife Finland, manages most of the geosites. Natural Resources Institute Finland and the Geological Survey of Finland provide essential inventories of sites in the Geopark area.

The Geopark manages several EU-funded projects, related to tourism, digitalization, and infrastructure. The latest projects are developing sustainable, geo-education, and cycling tourism. Co-operation between different groups in the Geopark has been successful, and local schools, firms, and developers have initiated Geopark projects that have had notably positive effects on the area's vitality and mutual identity.

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The Kivijata stone field in Lauhanvuori National Park is one of the most important and most visited geological sites in the Geopark.



# FUN Geopark

## 9<sup>th</sup> International Conference on UNESCO Global Geoparks

**September 9-15 2021**  
**Jeju Island Global Geopark Republic of Korea**

**11 September 2021:**  
**46th European Geoparks Network Meeting – Jeju Island, Republic of Korea.**

### *Welcome Message*

Jeju Island UNESCO Global Geopark has established the organizing committee for the successful implementation of the 9th International Conference on UNESCO Global Geoparks.

As chairperson of this committee, I would like to welcome you to Jeju Island Geopark. The theme of the 9th Conference is 'Fun'.

The committee is dedicated to providing the participants with great opportunities to share and exchange their good practices and lessons learned while they have a fun and meaningful time on Jeju Island.

A wide range of interactive sessions and field trips will enable participants to enjoy the nature and scenery of Jeju Island Geopark. Therefore, we look forward to welcoming you to the 9th International Conference on Jeju Island.

You will have a valuable hands-on learning experience accompanied by local residents on the beautiful island of Jeju

**Won Hee-ryong**

Chairperson of the Organizing Committee  
Governor of Jeju Special Self-Governing Province

### **REGISTRATION**

The official registration for the 9th International Conference on UNESCO Global Geoparks will be re-opened after the registration schedule is confirmed in 2021.

