

# EUROPEAN GEOPARKS NETWORK

European Geoparks Magazine • Issue 17

# 20 YEARS

## European Geoparks

### 2000 - 2020

#### 74 GEOPARKS | 24 COUNTRIES



Haute-Provence Geopark, FRANCE



Vulkaneifel Geopark, GERMANY



Lesvos Island Geopark, GREECE



Psiloritis Geopark, GREECE



TERRA.vita Geopark, GERMANY



Copper Coast Geopark, IRELAND



Marble Arch Caves Geopark, IRELAND & UK



Madonie Geopark, ITALY



Rocca di Cerere Geopark, ITALY



Styrian Eisenwurzen Geopark, AUSTRIA



Bergstraße-Odenwald Geopark, GERMANY



North Pennines AONB Geopark, UK



Luberon Geopark, FRANCE



North West Highlands Geopark, Scotland, UK



Swabian Alb Geopark, GERMANY



Harz-Braunschweiger Land Geopark, GERMANY



Hateg Country Dinosaurs Geopark, ROMANIA



Beigua Geopark, ITALY



Forest Fawr Geopark, UK



Bohemian Paradise Geopark, CZECHIA

# THE EUROPEAN GEOPARKS NETWORK

[www.europeangeoparks.org](http://www.europeangeoparks.org)

## 2020

**2-8 March 2020:** International Geological Congress – IGC

**4-8 March 2020:** ITB Berlin – Participation with GGN Stand in ITB Berlin

**19 March 2020:** IGGP Open Session - Paris

**24 - 30 March 2020:** 45th European Geoparks Network Meeting - Papuk UNESCO Global Geopark, Croatia

**24 March - 3 April 2020:** 209th Session of the UNESCO Executive Board – IGGP Evaluation

**22nd April 2020:** International Earth Day - Geopark Activities

**22-28 April 2020:** 1st APGN Geoparks Week 2020

**22-23 April 2020:** 2nd International Meeting and Workshop on UNESCO Global Geoparks in Qeshm Iran (with emphasis on Central Asia)

**26-29 April 2020:** Geoparks Conference in Vietnam

**May 2020:** 1st Conference on UNESCO Global Geoparks in Africa - Tanzania

**24th May - 7th June 2020:** European Geoparks Week

**1 - 11th June 2020:** International Intensive Course on Geoparks: UNESCO Global Geoparks and Sustainability - Lesvos Island UNESCO Global Geopark, Greece

**25-27 June 2020:** 3rd Geoparks Conference on UNESCO Global Geoparks in Greece and Cyprus: Geoparks-Protected areas Biodiversity and Geodiversity Conservation and Management – Vikos Aoos UNESCO Global Geopark, Greece

**14-22 September 2020:** 9th INTERNATIONAL CONFERENCE ON GEOPARKS - Jeju Island UNESCO Global Geopark, Republic of Korea

**14-16/9/20 UNESCO Global Geoparks Council Meeting**

**16/9/2020 APGN – EGN – GEOLAG Regional Meetings**

- 18.00 GGN Executive Board Meeting
- 17/9/2020 Opening of the Conference – Conference Sessions
- GGN AC Meeting
- 18/9/2020 Conference Sessions
- GGN General Assembly
- 19/9/2020 Field Trip and Gala Dinner – Award & Certificates Ceremony
- 20/9/2020 Sessions – Evaluator’s Seminar
- Closing Ceremony
- 21-22/9/20 Post Congress Field Trips

**5-10 October 2020:** Regional Course on UNESCO Global Geopark 2020 - Langkawi UNESCO Global Geopark, Malaysia

**13th October 2020:** International Day for Disaster reduction - Geopark Activities

**25th - 30th October 2020:** 6th International Course on UNESCO Global Geoparks, China University of Geosciences Beijing, China

**11th December 2020:** International Mountain Day - Geopark Activities

## 2021

**January 2021:** International Tourism Fair in Madrid FITUR

**March 2021:** 47th European Geoparks Network Meeting, Katla UNESCO Global Geopark, Iceland

**September 2021:** Asian Pacific Geoparks Network Coordination Committee Meeting, Satun UNESCO Global Geopark, Thailand

**September 2021:** 7th Asian Pacific Geoparks Network Symposium, Satun UNESCO Global Geopark, Thailand



## European Geoparks Network Magazine

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# GEOPARKS

## Where sharing good practice for 20 years makes a difference



The European Geoparks Network (EGN) is one of three regional networks designated as UNESCO Global Geoparks (UGGs).

The European Geoparks Network's main achievements during 2019 include the very successful 15th European Geoparks Conference, hosted by the Natural Park Sierra Norte de Sevilla UGGp (Spain), the creation of the "The transnational Geoparks Forum" initiated in Muskau Arch UGGp (Germany/Poland) and the addition of Courel Mountains UGGp (France), Trollfjell UGGp (Norway), and Vis Archipelago UGGp (Croatia) to the EGN's list of members. However, 2020 is a very special year because it marks the EGN's 20th anniversary. Through 20 years of successful networking, the EGN expanded from four founding members in four countries in 2000 into a vibrant network with 74 Geoparks in 26 countries. The variety of articles in EGN Magazine Issue 17 celebrates 20 years of networking and actively engaging in common projects.

Successful outcomes achieved by networking are showcased in the following articles: The European Geoparks Week 2019; UNESCO Global Geoparks target cooperation (Harz- Braunschweiger Land - Ostfalen UGGp); V Open Days of the Spanish Geoparks Forum (Las Loras UGGp); Education and UNESCO Global Geoparks.

All geoparks engage in formal and informal education. Beigua UGGp introduces its "Junior Geoparker" programme; Bohemian Paradise UGGp is actively involved in the "Guardians of the Earth" international programme. Collections of rocks and minerals illustrate the geodiversity of the Azores and Tuscan Mining Park. Chelmos Vouraikos UGGp focuses on the interaction between abiotic and biological factors. De Hondsrug UGGp has created two new educational trails. The formation of oceanic crust in Troodos UGGp is revealed in 2D and 3D animations. The 1920 Garfagnana-Lunigiana Earthquake and the centenary of the eruption of the Katla Volcano were used by the Apuan Alps UGGp and Katla UGGp to inform the public about the catastrophic consequences of tectonic and volcanic processes.

Geoparks develop geotourism by promoting their geological and cultural heritage. Contributions by UNESCO Global Geoparks Bakony – Balaton, Idrija, Pollino, Rocca di Cerere, Styrian Eisenwurzen, Swabian Alb, Odsherred and Vikos-Aoos describe new developments for extending their geotourism services. Promoting the cultural heritage is emphasized in articles by UNESCO Global Geoparks Famenne- Ardenne, Naturtejo, Lanzarote and Chin-

jo Islands, Rocca di Cerere and Sobrarbe – Pirineos. English Riviera UGGp highlights its new "Associate Partners" scheme. Cooperation with the new Jomfruland National Park protects the landscape for the future in Gea Norvegica UGGp. In the North Pennines AONB and UGGp a traineeship involving geoheritage protection was funded by the UK's National Lottery Heritage Fund and the INTERREG Atlantic Area Programme.

Geoparks also engage in marketing and promotional initiatives for sustainable development. Arouca and Magma UGGps use local food production for developing a sustainable local economy. "The Local Quality Pact" ensures the quality of services provided in Sitia UGGp. Chablais UGGp created a communication kit for its tourism partners. Geo-quotes are used as a strategy for online and offline marketing in the Basque Coast UGGp. The Burren and Cliffs of Moher UGGp promotes gender equality and empowering women as a driver for sustainable development.

Communications about fossils as evidence of ancient life are always exciting. Lesvos Island UGGp describes the discovery and geo-conservation of giant fossil tree trunks. Luberon UGGp reports the rediscovery of an outstanding site with 33 million year old fossil footprints. TERRA.vita UGGp highlights the first record of Megalodon, the largest known shark in Earth's history, from NW Germany. The earliest remains of bio-mineralized metazoans and complex trace fossils were the subject of a major international meeting in Villuercas- Ibores-Jara UGGp.

Geoparks deliver a bottom-up approach for engaging with the worsening global climate and environmental crisis, the threat to biodiversity and the impact of plastic pollution resulting from the world's carbon based economy and agricultural practices. "Together for our Future - Climate protection is environmental protection" is a LEADER funded educational project in Ore of the Alps UGGp. Promoting green travel is one of Fforest Fawr UGGp's aims in becoming a greener Geopark. Vulcaneifel UGGp describes the potential of an energy crop for enhancing biodiversity and mitigating soil erosion. "Fruit Trees of the Year", a project in Bergstrasse – Odenwald UGGp, is concerned with conserving biodiversity. The plastic pollution problem is addressed in Adamello Brenta UGGp's "Plastic Free" campaign.

Tony Ramsay  
Publication Editor

02	Calendar	<b>GEOTOURISM</b>
03	<b>FOREWORD</b> GEOPARKS: Where sharing good practice for 20 years makes a difference	Chelmos-Vouraikos Unesco Global Geopark, Greece <i>Crossing trails and meeting geosites</i>
05	15th European Geoparks Conference «Geoparks: Memory of Earth, Future for People» Natural Park Sierra Norte de Sevilla – UNESCO Global Geopark, Seville, Spain	UNESCO Global Geopark Styrian Eisenwurzen, Austria <i>A New Visitor Guidance System in the Green Heart of Austria</i>
08	<b>GLOBAL GEOPARKS</b>	Gea Norvegica UNESCO Global Geopark, Norway <i>Gea Norvegica Geopark cooperates with the new Jomfruland National Park</i>
10	15th European Geoparks Conference <b>Education and UNESCO Global Geoparks</b>	De Hondsrug UNESCO Global Geopark, Netherlands <i>Sabre-toothed Tiger Trail and Leewal Walk-Through-Time: Children and adults experience the Ice Ages in 3D in Hondsrug Geopark</i>
12	20 Years European Geoparks	Idrija UNESCO Global Geopark, Slovenia <i>A New Visitors Centre Featuring the “Written in rocks” Exhibition, an excellent starting point for exploring Idrija Geopark</i>
16	<b>NETWORKING</b>	Lanzarote and Chinijo Islands UNESCO Global Geopark, Spain <i>Art and Geology in Lanzarote and Chinijo Islands Geopark</i>
18	Muskau Arch UNESCO Global Geopark, Germany/Poland <i>The transnational Geoparks Forum initiated in Muskau Arch Geopark</i>	Naturejo UNESCO Global Geopark, Portugal <i>Proença-a-Velha Village celebrates 800 years by Promoting Research and Hosting Cultural Events in Naturejo Geopark</i>
19	Las Loras UNESCO Global Geopark, Spain <i>V Open Days of the Spanish Geoparks Forum in Las Loras Geopark</i>	Odsherred UNESCO Global Geopark, Denmark <i>Odsherred Geopark opens its third Information Point within one year</i>
20	<b>COOPERATION</b>	Pollino UNESCO Global Geopark, Italy <i>“On the trail of the Pollino line”, a geo-route through the Pollino Geopark</i>
21	Bakony-Balaton UNESCO Global Geopark, Hungary Geotour-guide training courses as a tool for strengthening “Geoparkan” identity	Swabian Alb UNESCO Global Geopark, Germany <i>Experience Earth history in the Geopoints Project in the Swabian Alb Geopark</i>
22	UNESCO Global Geopark Harz . Braunschweiger Land. Ostfalen, Germany UNESCO Global Geoparks target cooperation	Vikos- Aoos UNESCO Global Geopark, Greece <i>Eduentainment in the UNESCO Vikos-Aoos Geopark!</i>
23	Katla UNESCO Global Geopark, Iceland Raising Awareness about our Geological Heritage through Cooperation Commemorating the catastrophic eruption of the Katla Volcano in 1918	<b>EARTH HERITAGE</b>
24	<b>SUSTAINABLE DEVELOPMENT</b>	Apuan Alps UNESCO Global Geopark, Italy <i>The Centenary of the 1920 Garfagnana-Lunigiana Earthquake provides the Apuan Alps Geopark with an opportunity to learn from the past to build a safer future</i>
25	Adamello Brenta UNESCO Global Geopark, Italy Adamello Brenta Geopark launches “Plastic Free”, a campaign to reduce plastic waste together with public organizations	Lesvos Island UNESCO Global Geopark, Greece <i>Geoconservation and Public Works: Impressive new finds of giant fossil tree trunks at the the Acrochiras Wind Farm in Lesvos Island Geopark</i>
26	Arouca UNESCO Global Geopark, Portugal The contribution of Arouca Agrícola & Geofood initiatives for Sustainable Development in Arouca Geopark	Famenne-Ardenne UNESCO Global Geopark, Belgium <i>The «Fond des Vaulx»: folklore, geology and education</i>
27	English Riviera UNESCO Global Geopark, UK A new Associate Partner Scheme for 2019	Luberon UNESCO Global Geopark, France <i>Rediscovery of the fossil footprints of Saignon: a voluntary community project in Luberon Geopark</i>
28	Fforest Fawr UNESCO Global Geopark, Wales, UK Driving change through green travel	TERRA.vita UNESCO Global Geopark, Germany <i>The Megalodon Excavation Project</i>
29	Magma UNESCO Global Geopark, Norway The GEOfood brand: Local and International cooperation	Villuercas-Ibores-Jara UNESCO Global Geopark, Spain <i>The origin of life as we know it: the international meeting on the Ediacaran System and the Ediacaran-Cambrian transition in Villuercas-Ibores-Jara Geopark</i>
30	Ore of the Alps UNESCO Global Geopark, Austria Together for our Future - Climate protection is environmental protection	<b>EDUCATION</b>
31	The Rocca di Cerere UNESCO Global Geopark, Italy Hosting the study visit on “Enhancement of ancient biodiversity in the agri-cultural District”	Azores UNESCO Global Geopark, Portugal <i>“LITOTECA”: more than a collection of rocks!</i>
32	Sitia UNESCO Global Geopark, Greece The Local Quality Pact: The real support for the Local Community in Sitia Geopark	North Pennines AONB and UNESCO Global Geopark, UK <i>Geology Projects Traineeship</i>
33	Basque Coast UNESCO Global Geopark, Spain We got it! Geo-quotes, a special way to celebrate the Green Card in the Basque Coast Geopark.	Troodos Unesco Global Geopark (TUGGp), Cyprus <i>A New Geoeducational Programme in Troodos Geopark</i>
34	Bergstrasse-Odenwald UNESCO Global Geopark, Germany “Fruit trees of the year” the taste of the territory and protection of biodiversity (Global Agenda 2030, SDG 15).	Tuscan Mining UNESCO Global Geopark, Italy <i>The Educational Collection of Rocks and Minerals in the Tuscan Mining Geopark</i>
35	Burren and Cliffs of Moher UNESCO Global Geopark, Ireland The Leading Role of Women in the Burren and Cliffs of Moher UGGp	Beigua UNESCO Global Geopark, Italy <i>Beigua UNESCO Global Geopark's Junior Geoparker Programme</i>
36	Chablais UNESCO Global Geopark, France A Question of Marketing in the Chablais UNESCO Global Geopark, France	Bohemian Paradise UNESCO Global Geopark, Czech Republic <i>Guardians of the Earth in the Bohemian Paradise Ecological Education Centre</i>
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# 15th European Geoparks Conference



Natural Park Sierra Norte de Sevilla  
UNESCO Global Geopark  
Sevilla 23-27th September, 2019  
Andalusia Spain

## Geoparks: «Memory of Earth, Future for People»

Natural Park Sierra Norte de Sevilla – UNESCO  
Global Geopark, Seville, Spain.



The 15<sup>th</sup> European Geoparks Conference closes with a performance by the Geopaca Folk Group, from Villuercas-Ibores-Jara UNESCO Global Geopark (Spain).

The Natural Park Sierra Norte de Sevilla - UNESCO Global Geopark (Spain) hosted the 15<sup>th</sup> European Geoparks Conference, from 25 -27 September in the the Fundación Tres Culturas del Mediterráneo (Three Mediterranean Cultures Foundation), an architecturally splendid building in the city of Seville.

Approximately 400 participants from 39 different countries attended the conference, with the motto "Geoparks: Memory of Earth, Future for People". The majority of the participants were from European countries with established Geoparks

(90%). However, delegates from European countries, currently without Geoparks (Estonia, Luxembourg, Russia, and Sweden) were welcomed together with participants from Asia (China, Iraq, Iran, Nepal and Taiwan), Africa (Gambia and Tunisia) and the continents of North and South America (Brazil, Canada, Chile, Mexico, Uruguay, and the USA).

The activities of the Conference began on Wednesday, September 25 with the Opening Ceremony, in which the delegates were welcomed by Carmen Crespo Díaz, Minister of Agriculture,



Delegates arriving at the Fundación Tres Culturas del Mediterráneo for the opening ceremony of the 15<sup>th</sup> European Geoparks Conference.

Kristof Vanderberghe, Head of the UNESCO International Geoscience and Geoparks Programme (on the left); Carmen Crespo Díaz, Minister of Agriculture, Livestock, Fisheries and Sustainable Development (Andalusia Government); and Charalambos Fassoulas, EGN Vice-Coordinator welcome delegates to the 15<sup>th</sup> European Geoparks Conference.

Livestock, Fisheries and Sustainable Development (Andalusian Government); Charalambos Fassoulas, EGN Vice-Coordinator; and Kristof Vanderberghe, Head of UNESCO International Geoscience and Geoparks Programme. The speeches were followed by three keynote presentations delivered by: Nickolas Zouros, President of the Executive Board of the Global Geoparks Network (*The Global Geoparks Network: Challenges and future perspectives*), Maxie Syren, German UNESCO Commission (*Implementation of the Agenda 2030 UNESCO Global Geoparks as regional moderators*), and Asier Hilario, Coordinator of the Spanish Geoparks Forum (*Geoparks: Earth's Memory, People's Future*). The day conclud-

ed with the conference dinner, a social event and an opportunity for delegates to get to know each other.

A total of 152 presentations including 119 lectures and 33 poster displays with the following themes were delivered during the conference: “Aspiring Geoparks”; “Education and communication in Geoparks”; “Geohazards and climate change”; “Sustainable development and geotourism” and “Geological heritage and research in Geoparks”.

Thursday, 26 September was devoted to mid-conference field trips. Seven routes were selected allowing delegates, accompanying persons and conference volunteers to discover the





**Nickolas Zouros, President of the Executive Board of Global Geoparks Network, during his keynote address: The Global Geoparks Network: Challenges and future perspectives.**

Natural Park Sierra Norte de Sevilla – UNESCO Global Geopark and enjoy its landscapes, geology, ecological resources, cultural sites and its people and traditions. The following routes to significant locations in the heart of the Geopark included: *Cerro del Hierro and Huéznar Waterfalls; El Chorro Gorge; El Berrocal landscapes and the Suture Zone; La Lima iron mine and Cazalla de la Sierra historical Centre; Local and Natural Park history; In the heart of Sierras Subbéticas Geopark and The geo-cultural legacy of Sierras Subbéticas.* The city fieldtrip was devoted to *Fossils in Seville City.*

Five workshops with the following themes were held on 27 September: *Agenda SDG and Geoparks; Interpretive tools for Geoparks; Education in Geoparks; American Geoparks: Identity and relations with the EGN.* Their success was ensured by the active involvement of the delegates. The signing of collaboration agreements between the Mexican Geopark Mixteca Alta and the European Geoparks Naturtejo (Portugal) and Villuercas-Ibores-Jara (Spain), at the end of the workshop dedicated to American Geoparks, is an example of what can be achieved in an EGN Conference workshop.

The Conference Venue Hall provided delegates

with a location to enjoy five exhibits. These included: *The European Geoparks Photo Exhibition* (with one photo from each of the 75 Geoparks in 24 countries); *The 2030 Agenda for Sustainable Development in Geoparks; The Fossils Workshop Poster: Images of ancient life in the European Geoparks; INTERREG Project Atlantic Geoparks; and the RENPA Shop – Network of Natural Protected Areas of Andalusia with products from the Andalusian Geoparks.*

The Closing Ceremony was chaired by Kristin Rangnes, EGN Coordinator and Francisco José Gutuérrez Rodríguez, General Secretary of Environment, Water and Climate Change representing the Andalusian Regional Government. Sessia Val Grande UNESCO Global Geopark (Italy) was presented as the location and host Geopark for the 16<sup>th</sup> European Geoparks Conference. The ceremony concluded with a performance by *Geopaca*, a musical group from Villuercas-Ibores-Jara (Spain), consisting of students and teachers from this UNESCO Global Geopark.

The Chair and the Organizing Committee of the 15<sup>th</sup> European Geoparks Conference wishes to emphasize the success of the Conference, which involved more than 30 news bulletins and interviews on radio and social media. They also wish to thank all participants for attending and contributing to the Conference and associated events. We were honoured by your presence in Sierra Norte de Sevilla UNESCO Global Geopark and in Andalusia!

**Alberto Gil Toja**  
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The Abstract Book of the Conference is available on the website  
[http://www.europeangeoparks.org/  
wp-content/uploads/2015/09/15th  
-European-Geoparks-Conference.  
-ABSTRACTS-BOOK.pdf](http://www.europeangeoparks.org/wp-content/uploads/2015/09/15th-European-Geoparks-Conference.-ABSTRACTS-BOOK.pdf)



**Conference delegates visit the Hueznar River Spring, the largest source of groundwater in Seville Province.**

# 15th European Geoparks Conference

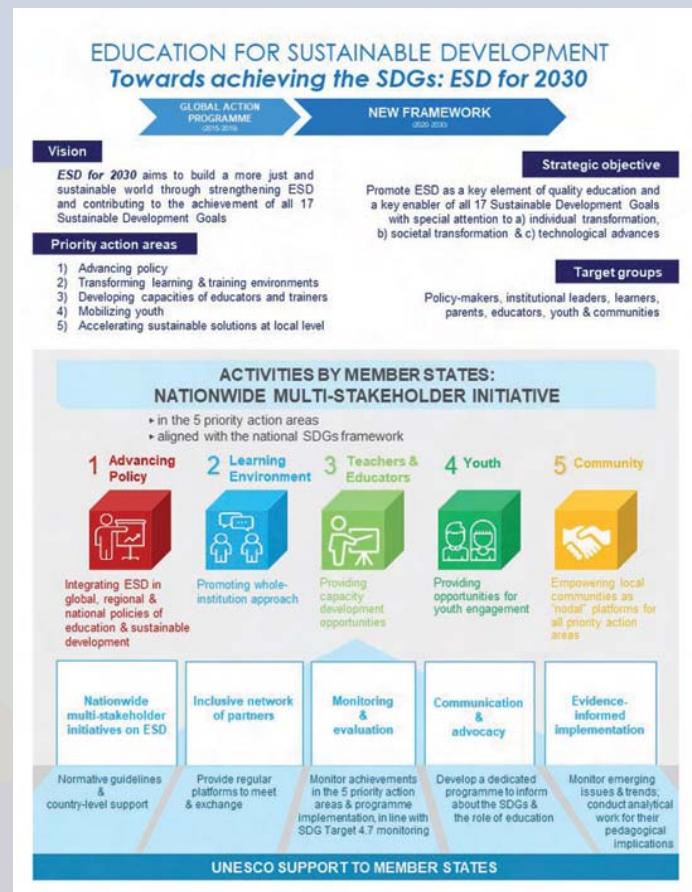
## Education and UNESCO Global Geoparks

When this issue of the European Geoparks Magazine appears in 2020, UNESCO will have already launched the new 2020-2030 framework on Education for Sustainable Development (ESD). Approved by the General Conference in November 2019, the final resolution encourages the member states and the UNESCO programmes, among which the Global Geoparks are cited, to adopt this framework by integrating ESD into their educational activities. In the words of UNESCO, "(ESD) empowers people to change their thinking and work towards a sustainable future. Through ESD, access to quality sustainable development education at all levels and in all social contexts must be improved, to transform society by reorienting education and helping people develop knowledge, skills, values and behaviors necessary for sustainable development. It involves sustainable development issues, such as climate change and biodiversity, in teaching and learning. Individuals are encouraged to be responsible actors who solve challenges, respect cultural diversity and contribute to creating a more sustainable world".

ESD must support the achievement of all Sustainable Development Goals (SDGs). Although objective 4 is specific to education, Geoparks engage in different educational activities corresponding to the priority areas of action of the ESD for 2030 Framework. That is, cooperating with the national or local authorities' experts in education, getting involved in the learning environment and working with educators and trainers, with young people and with the communities.

The European Geopark Working Group on education has documented many of these activities as good practices and has promoted their dissemination, firstly in a summary dossier produced in 2018 and secondly by organizing workshops

Interacting with students in a primary school in Sierras Subbéticas UGGp.



on education during the UNESCO International Conferences held in Madona di Campiglio, 2018 and the European Geoparks Conference Seville, 2019. During the last year, the Working Group decided to organize seminars that encourage the exchange between the participants, through live presentations and exercises using different tools or methodologies. Therefore, it promoted the same active methodology that geoparks use in their educational activities that are considered appropriate for conducting workshops.

At the Seville Conference, September 2019, the Workshop consisted of three micro-workshops of short duration:

The first micro-workshop was entitled "Communication of sciences for a wider public" aiming to share practices in how the communication was achieved either face-to-face or by using different tools or information panels. Coordinated by Asier Hilario from the Basque Coast UGGp and Marie-Luise Frey from Messel Pit World Heritage Site, the micro-workshop revealed amazing insights about the innovative dissemination of information by UNESCO Global Geoparks. These included: talks organized by the Gea Norvegica UGGp in a bar and in a jazzclub about geoparks in general and about Gea Norvegica Geopark;

**UNESCO**  
**Education for Sustainable Development information panel.**



**Participants in  
the European  
Geoparks  
Working Group  
on Education in  
Seville 2019.**

bringing the palaeontological heritage to the general public by experiencing scientific research in Causses du Quercy UGGp; creating a comic showing the relationship between geology, stone art, science and education in Beaujolais UGGp; a workshop for blind people, both indoors and outdoors in the North Pennines AONB and UGGp; and, finally the use of research methodologies with students creating hypotheses about geological history carried out in Sesia - Val Grande UGGp. Different approaches in using information panels were presented by Hondsrug UGGp, Origens UGGp and the Basque Coast UGGp.

The second micro-workshop provided an opportunity to interact directly with schools in Las Loras and Sierras Subbéticas UGGps. The students from Las Loras explained how they developed a trail learning about the Geopark and its landscape using a methodology in which they learned different skills resulting in the production of a game and a video. The students concluded that it was

hard work, very challenging but much better than an ordinary lesson. They also developed a sense of belonging and a feeling of pride in their territory. The Sierras Subbéticas primary school presented a game in which they played, competed and learned about the Spanish Geoparks.

Finally, a large exhibition of games was exhibited with the participation of many other Geoparks. This activity, coordinated by Cristian Ciobanu from Hateg UGGp and Naomi Foster from North Pennines AONB and UGGp, encourages the participants to act the parts of students or Geopark visitors. Games are very exciting tools which are useful in formal and informal education in the classroom as well as in Geopark visitor centres for families, students and geotourists.

After the workshop, some conclusions concerned with keys to success, included:

- Learning by doing different things in different ways
- Letting students find information by themselves.
- Appeal to different skills.
- Getting out of the classroom.

All are associated with the aims of the ESD, outlined above, for helping people to develop knowledge, skills, values and behaviours necessary for sustainable development. The EGN Working Group on Education will continue to share practices that help their territories to improve their own approaches to sustainable development.

**José M<sup>a</sup> Barrera.** Villuercas-Ibores-Jara UGGp. Catalyst. [jmbarrera@dip-caceres.es](mailto:jmbarrera@dip-caceres.es)

With contributions by the members of the EGN Workgroup on Education.

**Creating a comic showing the relationship between geology, stone art, science and education in Beaujolais UGGp.**



# 20 YEARS European Geoparks



The European Geoparks journey began 20 years ago in June 2000 when representatives from four European Geoparks met in Lesvos Island, Greece and signed a convention defining the Geopark concept and declaring the formation of the European Geoparks Network (EGN).

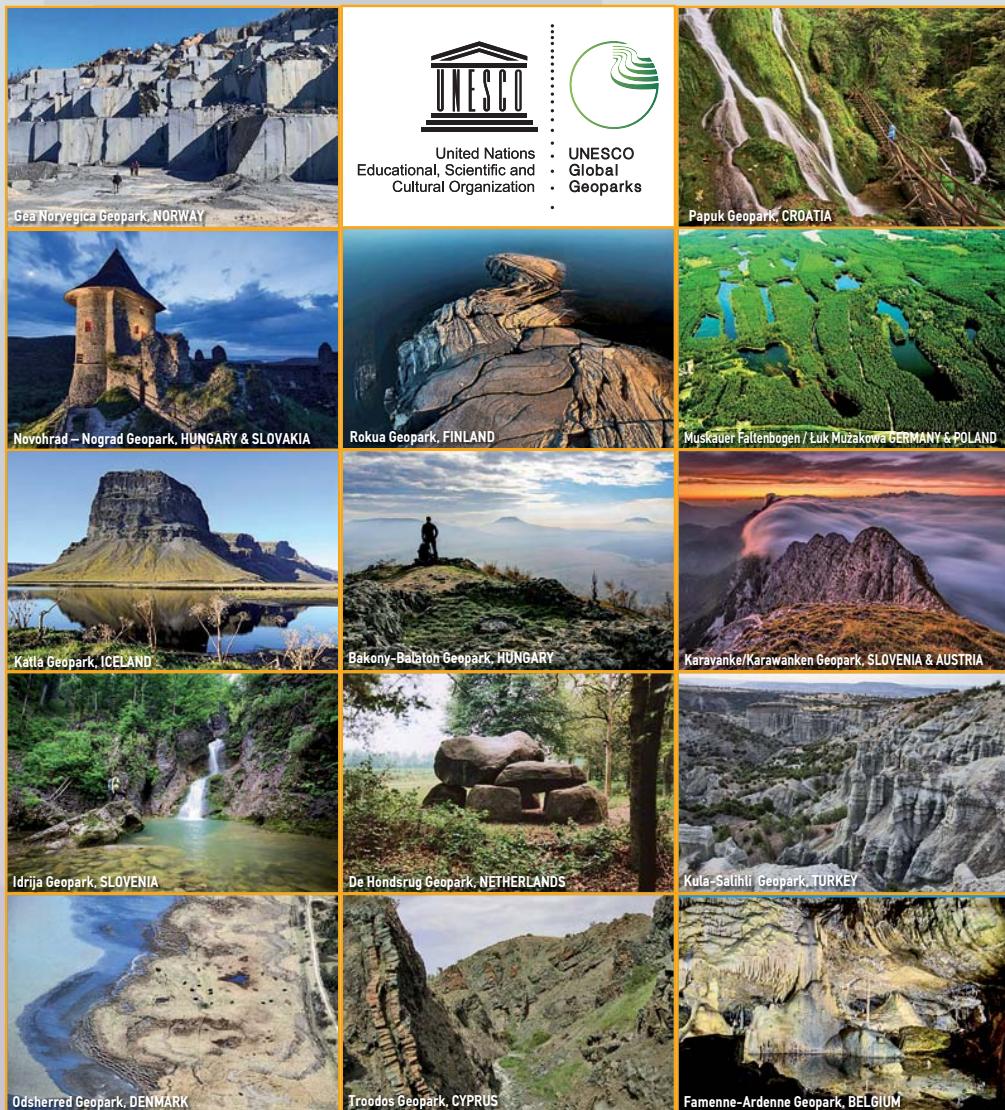
The four territories included the Reserve Géologique de Haute-Provence (France), the Natural History Museum of Lesvos Petrified Forest Geopark (Greece), Gerolstein/Vulkaneifel (Germany) and the Maestrazgo Cultural Park (Spain).

Already from the beginning important decisions were made, concerning the aims and objectives for European Geoparks. The main objectives involved the protection and conservation of the geological heritage and promotion of sustainable economic development in their territories. The general purpose of the Network was to share expertise and information. After 20 years of networking the main aims are unchanged and involve: the conservation of the geological heritage, communicating the significance of this heritage in relation to other natural and cultural assets within the Geopark

territory and, by disseminating knowledge, to enhance local sustainable development, mainly through geotourism.

In April 2001, an official agreement was signed between the EGN and UNESCO in which the new Geoparks organization was placed under the auspices of UNESCO, a designation recognized and used by all new Geoparks until 2016.

Although the Geopark Network started in Europe, the Geopark concept was also evolving in other parts of the world. This development presented the EGN and UNESCO with an ideal objective. Following the EGN model, the Global Geoparks Network (GGN) was founded in 2004 in Paris, as an international partnership for developing models of best practice for conserving the geological heritage and promoting local sustainable economic development. The Madonie Declaration in 2005 recognized the EGN as the official regional branch of the GGN. Subsequently the model for creating regional networks has been adopted by the Asian Pacific Geoparks Network, the Latin American and Caribbean Geoparks Network and most recently



by the African UNESCO Global Geoparks Network.

Another milestone was reached in 2015 when UNESCO sanctioned the creation of a new designation, the UNESCO Global Geoparks, as part of UNESCO's new International Geoscience and Geoparks Programme (IGGP). This, the first initiative of its kind to be established by UNESCO for 40 years, resulted from effective networking among geoparks. This was a huge step for the whole Geopark community and in its Coordination Committee Meeting in Paris 2015 they agreed to continue as the regional network for Europe, to follow the GGN rules and to include individual and honorary GGN members from Europe as new categories for membership of the EGN.

Through 20 years of networking the EGN has developed into a very active network consisting of 74 Geoparks in 26 countries, actively engaging in common projects, working groups, biannual Coordination Committee Meetings, Geopark conferences and activities like EGN Week and participating in international tourism fairs. The EGN communication tools include the EGN Magazine and Newsletter, leaflets, maps and social media. The European Geoparks are also active in, and will continue to promote and implement, the Sustainable Development Goals defined by the UN in 2015.

European Geoparks communicate the very long history of Mother Earth, including the histo-

ry of mankind. However, now it is essential that Geoparks contribute to safeguarding the future of our Earth, its climate, nature and its people. In September 2019 The EGN conference in Sevilla, Spain ended with the following conclusion:

**Geoparks: memory of the Earth – future for people:**

*Geoparks are concerned – we are committed to the document that Mother Earth has left us. Geoparks are active, we conserve the geological heritage, interpret Earth's history and disseminate this knowledge.*

*Several geoparks are in areas where our restless Earth makes geohazards happen. And climate change affects us all. Geoparks work with resilience, how to cope with and understand geohazards, geoparks are active partners in the combat against climate change, geoparks are committed to our common goals. We are sharing, we are using our experiences to improve people's lives, and, as a growing network, we will continue to strive for our common future.*

With this conclusion European Geoparks celebrate our 20th anniversary and will continue with our activities and responsibilities for the next 20 years!

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# The European Geo



ADAMELLO BRENTA GEOPARK, ITALY



BAKONY-BALATON GEOPARK, HUNGARY



TERRA.VITA GEOPARK, GERMANY



APUAN ALPS GEOPARK, ITALY



BOHEMIAN PARADISE GEOPARK, CZECHIA



TUSCAN MINING GEOPARK, ITALY



CHELMOS -VOURAIKOS GEOPARK, GREECE



CHABLIS GEOPARK, FRANCE



AZORES GEOPARK, PORTUGAL



HARZ - BRAUNSWEIGERLAND- OSTFALEN GEOPARK, GERMANY



IDRIJA GEOPARK, SLOVENIA



ORIGENS GEOPARK, SPAIN



ENGLISH RIVIERA, GEOPARK UK

The European Geoparks Week (often called the Geoparks Festival) is held in late May and early June. The dates for Geoparks Week are a major item in the annual calendar of 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 eco-

nomic benefit for the local people by promoting geotourism. It also demonstrates to communities that they are part of a wider European Network. During EGN Week, 2019, 73 European Geoparks organized approximately 1,100 events that attracted nearly 430,000 people. Nowadays on-line promotion of the Geoparks on the web and social media plays an increasingly important role but still more than 228,000

# parks Week 2019



SOBRARBE - PIRENEOS GEOPARK, ARAGON SPAIN



LAS LORAS GEOPARK, SPAIN



KATLA GEOPARK, ICELAND



KULA-SALIHLI GEOPARK, TURKEY



LESVOS ISLAND GEOPARK, GREECE



MAGMA GEOPARK, NORWAY



LANZAROTE AND CHINJO ISLANDS GEOPARK, SPAIN



KARAVANKE - KARAWANKEN GEOPARK, SLOVENIA & AUSTRIA



SIERRAS SUBBETICAS GEOPARK, ANDALUCIA SPAIN



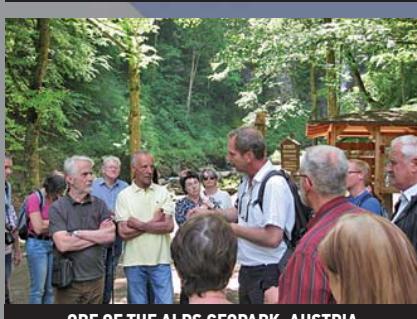
MASSIF DES BAUGES GEOPARK, FRANCE



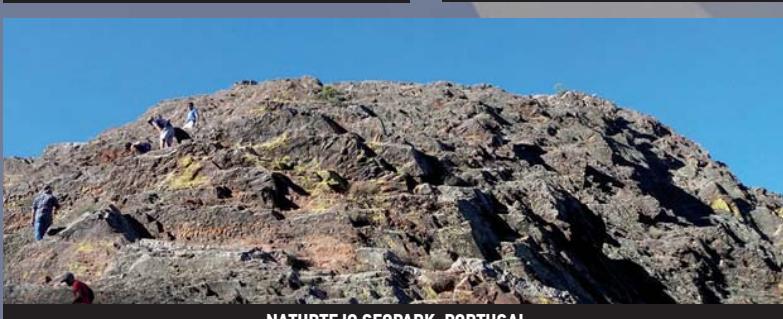
PAPUK GEOPARK, CROATIA



MOLINA-ALTO TAJO GEOPARK, SPAIN



ORE OF THE ALPS GEOPARK, AUSTRIA



NATURTEJO GEOPARK, PORTUGAL

programme flyers and over 400 printed articles were published in 24 European countries.

Events in the 2019 European Geoparks' programmes involved a variety of activities and, by highlighting the links between the natural heritage and the local communities, informed the wider public about the holistic nature of the Geopark concept. Guided tours provide an opportunity to showcase landscapes along estab-

lished way-marked trails and to introduce new trails, e.g. Las Loras UGGp. However, guided tours are not just restricted to following trails through the landscape. The Apuan Alps UGGp included a historical re-enactment of the Italian Campaign of World War 2 along its Gothic Line trails. Chelmos Vouraikos UGGp added bird watching and environmental games for children. Origens UGGp linked myths and geology,



SESSIA VAL GRANDE GEOPARK, ITALY



STYRIAN EISENWURZEN GEOPARK, AUSTRIA



VULKANEIFEL GEOPARK, GERMANY



FAMENNE - ARDENNE GEOPARK, BELGIUM



TROLLFJELL GEOPARK, NORWAY



FFOREST FAWR GEOPARK, WALES UK

while Sobrarbe UGGp linked its cultural heritage with geology. Lesvos Island UGGp includes an educational field trip in The Petrified Forest Park as part of the Intensive Course on Geoparks. The guided tour of Csodabogýós Cave in Bakony-Balaton UGGp focused on a geosite. Field excursions and guided tours require trained guides and Sessia Val Grande UGGp introduces its first specially trained Geopark Guides.

A beautiful landscape can also be appreciated in other exciting ways. In Katla UGGp participants experienced geology through ziplining, in Trollfjell UGGp through coasteering, in Styrian Eisenwurzen UGGp through GeoRafting, and in the English Riviera UGGp on a sight-seeing kayak tour. Cycling in the Massif des Bauges UGGp and panning for garnets in the Bohemian Paradise UGGp are other exciting activities. Preparing or sharing a meal contributed to social events in Lanzarote and Chinijo Islands and Papuk UNESCO Global Geoparks. Visitors were entertained by school choirs in Karavanke/Karawanken UGGp, and by geological chatter and music in the Tuscan Mining UGGp. Fossils provide an added attraction during European Geoparks Week. In Naturtejo UGGp, participants searched for trilobites on the Fossils Trail of Peha Garcia, made models of trilobites in Vulcaneifel UGGp and, through play, learned about the age of the dinosaurs in TERRA.vita UGGp.

Activities designed for children and students

are a regular feature during European Geoparks Week. The Azores UGGp celebrated "Children's Day" with the game "Azores Volcanoes". Children participated in a treetop quiz in Chablais UGGp, a clay workshop in Molino Alto Tejo UGGp and made flax mandalas (geometric designs with spiritual significance) in Idrija UGGp. Students from two schools in Sierras Subbeticas UGGp enrolled in the "I am a Geoparker" project. Magma UGGp organized a workshop together with a high school.

Networking at a regional level among UNESCO Global Geoparks is an essential activity. Fforest Fawr UGGp used its Family Day to showcase the cooperation between twelve Geoparks in the Interreg Atlantic Area Programme.

Concern for protecting the environment and the effect of global climate change was expressed in Katla UGGp, by involving school children in litter picking and in Adamello Brenta UGGp by focusing on scientific research at high altitudes.

The great variety of activities during European Geoparks Week 2019 and the large number of participants is evidence of its success, and we look forward to building on this by offering even more exciting activities in 2020.

Name of the Geopark	Activities/ Events	Press releases	Printed copies for program flyer	Printed articles	Visitors
Adamello Brenta Geopark	15	5	20,000	1	490
Apuan Alps Geopark	10	12	1,000	10	1,600
Arouca Geopark	19	9	10	37	4,000
Azores Geopark	20	1	25	3	670
Bakony-Balaton Geopark	10	9			260
Basque Coast Geopark	16	7	9,000	20	2,000
Beaujolais Geopark	10	13			460
Beigua Geopark	10	15	12,000	5	1,000
Bergstrasse-Odenwald Geo-Naturpark	58	10	2,500	5	4,200
Bohemian Paradise Geopark	8	4	3,100	2	688
Burren and Cliffs of Moher	7	1		1	175
Cabo de Gata-Níjar Natural Park	9	1	15	1	200
Catalunya Central Geopark	9	2			185
Causses du Quercy Geopark	17	4	700	11	324
Chablais Geopark	29	2	677	15	1,000
Chelmos Vouraikos Geopark	9	2	1,500	2	3,000
Cilento, Vallo di Diano and Alburni Geopark	6	3			600
Origen Geopark	11	2	1,200		400
Copper Coast Geopark	12	2	300	1	300
El Hierro Geopark	3	10	150		250
English Riviera Geopark	26	1	10,000	1	5,043
Famenne-Ardenne	3		80		150
Fforest Fawr Geopark	7	3	1,000	6	450
Gea Norvegica Geopark	15	15	1,000	5	900
Geological, Mining, Historical and Environmental Park of Sardinia	24	10	500	2	5,000
GeoMôn Geopark	13	4	3,080	2	10,000
Harz · Braunschweiger · Land · Ostfalen Geopark	10	14	8,000	3	240
Hateg Country Geopark	10	6	100	50	1,500
Haute-Provence Geopark	6		25		65
Hondsrug Geopark	18	10	7,500	10	8,000
Idrija Geopark	8	28	1,000	1	300
Karavanke/Karawanken Geopark	33	10	1,950	5	5,000
Katla Geopark	13	3	100		400
Kula-Salihli Geopark	8	2	10		322
Lanzarote and Chinijo Islands Geopark	29	3	100		3,517
Las Loras Geopark	13	7	100	2	600
Lesvos Island Geopark	14	5	10	15	1,462
Luberon Geopark					
Madonie Geopark	36	30	65	8	5,000
Magma Geopark	8	5		1	200
Marble Arch Caves Geopark	6	5	5,000	1	200
Massif des Bauges Geopark	10	3	3,000	10	400
Molina Alto Tajo Geopark	31	600	2,000		200
Monts d'Ardèche Geopark	4	5	20,000	3	204
Muskauer Faltenbogen / Łuk Mużakowa Geopark	11	20	10,000	15	11,000
Naturtejo Geopark	15	16	100	50	278,000
North Pennines AONB	7	1		1	587
North West Highlands Geopark	12	2			89
Novohrad-Nógrád Geopark	23	14	32	6	12,500
Odsherred Geopark	64	5	28,000	8	12,000
Ore of the Alps Geopark	10	8	2		400
Papuk Geopark	10	12	300	9	750
Pollino Geopark	9	4	20	3	400
Psiloritis Natural Park	18	30	1,500		10,000
Reykjanes Geopark	7	13	15,000		130
Rocca di Cerere Geopark	10	2			250
Rokua Geopark	3	2		2	200
Sesia-Val Grande Geopark	2				50
Shetland Geopark	75	3	1,000	3	1,000
Sierra Norte de Sevilla Natural Park	29				1,000
Sierras Subbéticas Natural Park	18	2	100	1	1,815
Sitia Geopark	4	4	300	15	2,500
Sobrarbe-Pirineos Geopark	11	26	2,500	10	2,338
Styrian Eisenwurzen Geopark	13		30	11	400
Swabian Alb Geopark	33	30	20,000	20	6,000
Terra.Vita Naturpark	15	15	15,000		163
Terras de Cavaileiros Geopark	7	35	360	4	1,269
Trollfjell Geopark	3	2	2,000	3	50
Troodos Geopark	7	40	12		13,804
Tuskan Mining Geopark	5	5	5,000	20	1,000
Vikos–Aoos Geopark	4	5	100	4	200
Villuercas-Ibores-Jara Geopark	41	2	500	14	1,350
Vis Archipelago Geopark	14	4	10		200
Vulkaneifel Geopark	32	6	10,000	3	750
	1,145	1,191	228,663	441	431,150

Muskau Arch UNESCO Global Geopark,  
Germany/Poland



# The transnational Geoparks Forum initiated in Muskau Arch Geopark

Group photo with Stefan Ludwig (centre) the Minister of Justice, for Europe and for Consumer Protection in the German Federal State of Brandenburg.



From October 16th to 19th 2019 thirteen representatives from transnational Geoparks met in Weißwasser/ O.L. (Germany) and Łęknica [venk'ni:ca] (Poland) in the Muskauer Faltenbogen / Łuk Mużakowa UNESCO Global Geopark (UGGp) to discuss closer cooperation in the future. Currently the four transnational UNESCO

Global Geoparks include: Karavanke/Karawanken UGGp (Austria and Slovenia), Marble Arch Caves UGGp (Republic of Ireland and Northern Ireland, UK), and Novohrad – Nógrád UGGp (Hungary and Slovakia). The forum, was initiated by the German-Polish UGGp, in order to raise awareness of, and to address, the different challenges faced by

Presentation by Nancy Sauer, Managing Director of Muskau Arch UGGp, during the opening session of the Transnational Geoparks Forum.





**Richard Watson, chairman of the meeting, co-ordinates the formulation of the Łęknica Declaration.**

transnational Geoparks in comparison with other Geoparks. These can include, for example, different languages, legal procedures and administration structures which impact on the management structures of transnational Geoparks.

The first official meeting was opened by Stefan Ludwig, the Minister of Justice for Europe and for Consumer Protection in the German Federal State of Brandenburg with the statement that: *"The Muskauer Faltenbogen/Luk Mužakowa UNESCO Global Geopark as a transnational initiative is a true European project. Therefore sharing experiences and ideas with colleagues from other transnational Geoparks is the next logical step."*

For two full days the participants were able to visit sites throughout the entire Geopark area

and participate in discussions and workshops with stakeholders in Germany and Poland. The Forum explored numerous issues and challenges which were shared by all of the transnational Geoparks and agreed on various steps for working together in the future. The meeting concluded with the signing of the Łęknica Declaration on 18 October, 2019 for the establishment of the Transnational UNESCO Global Geoparks Forum. The delegates in Łęknica elected Richard Watson as the Forum's first chairperson.

The Forum invites and will advise and support initiatives for creating transnational Geoparks from all over the world.

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**A visit, during a field excursion to the ring kiln, an ancient site for brick production in Klein Kölzig, Germany. This building is scheduled in 2020 as the future office for the Muskau Arch Geopark.**



**Presentation by Péter Oláh from Novohrad/ Nógrád UGGp, Hungary/ Slovakia during a session in Łęknica, Poland.**



**Visit to a site with a cold acidic, iron sulphate spring in the Polish sector of Muskau Arch UGGp.**



**Jacek Koźma guides the field excursion in the Polish sector of Muskau Arch UGGp.**



# Las Loras UNESCO Global Geopark, Spain

## V Open Days of the Spanish Geoparks Forum in Las Loras Geopark

Geoparks group photo at La Lorilla viewpoint.



Meeting of the delegates at the Spanish Geoparks' Forum.



Opening of the V Open Days of the Spanish Geoparks' Forum.

The Open Days and the meeting of the Spanish Geoparks Forum are annual events aiming to make Geoparks in Spain known and visible. They are also a meeting point for sharing experiences and knowledge and provide an opportunity for designing common projects. In essence, they are events for promoting cooperation and networking between different territories which share common goals.

This year, the V Open Days, from 15 -16 October, were organized by Las Loras UGGp. The meeting focused on several lines of action supporting the daily work developed by Geoparks in order to acquaint the public with the importance of this UNESCO programme.

More than 160 people attended the event. They included 23 representatives of the Spanish Geoparks, delegates of aspiring Geoparks, representatives of local and regional administrations, representatives of the Geological Survey of Spain, students and several people from local communities, as well as the General Secretary of the Spanish National Commission for UNESCO Cooperation.

During the opening of the meeting, a press conference, attended by politicians, representatives of Las Loras Geopark and the coordinator of the Spanish Geoparks Forum, was held. Subsequently, members of the public were welcomed

and the V Open Days were inaugurated.

The event consisted of several sessions, conducted like interviews and convened by the Spanish Geoparks' directors, who presented the suggested subjects. Six tables were organized with the following topics: Science, research and heritage protection; Education; Rural development and participation; Geotourism; New applications; Las Loras Geopark. At the end of each interview the public was encouraged to ask questions or to contribute relevant information. The Open Days finished with a visit to the Geopark's Visitors Reception Centre, a meal for all participants and a fieldtrip to some of the Las Loras Geopark's sites of interest. On 16 October an internal meeting of the Forum was held, as well as a fieldtrip to show some of the activities developed within Las Loras Geopark during the last years.

The success of the open days was demonstrated by reference to the event in more than ten regional media, by the high number of participants and politicians and the initiation of several common projects. All the aims pursued were fully completed.

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# Geotour-guide training courses as a tool for strengthening “Geoparkian” identity



Geotour guides  
near Veszprém  
Castle which is  
built on Triassic  
dolomite.  
(Photo by Barnabás  
Korbély)

Guided geotours are 'flagships' for geotourism provision in Bakony-Balaton UNESCO Global Geopark. Sixty-hour-long geotour-guide training courses, coordinated by Balaton Uplands National Park Directorate and the management body of the Geopark have been delivered in the Geopark since 2009. The courses aim to transfer as much 'localized' knowledge to the local participants as possible. To-date twelve courses have been delivered in different areas of the Geopark and the entire territory was covered by autumn 2019. However, there is still much for future geotour-guides to discover or for those who just simply would like to learn about and appreciate the territory's unique geological and cultural heritage.

Altogether 179 people, mostly dedicated locals, have participated in the programme, and some of them are already working in geotourism. Thanks to the enthusiastic participants who completed more than one course, a total of 318 certificates have



Discovering the  
cultural heritage  
of the Geopark.  
Participants  
visit a church,  
built in the 11th  
century, near  
Öskü.  
(Photo by Barnabás  
Korbély)

been issued. Most of the courses were completed with the support of Geopark Partner NGOs, Bakonyalja Barátai Association and Pangea Association, who successfully applied for funds to make the courses financially accessible for more participants.

The curriculum of every training course reflects the holistic approach of UNESCO Global Geoparks. Thanks to lectures delivered by an experienced geologist, geographer, biologist, archaeologist and ethnographer, the sessions offer a unique opportunity to discover the Geopark's geological, geomorphological, hydrological, ecological and cultural heritage. Of course, many field trips and outdoor exams at geosites are also important parts of the courses. We have received very positive feedback regarding the quality of the training, and the guides became members of a cohesive community. Besides providing participants with an interesting and joyful experience, the courses also offer a great opportunity to develop new geotourism services. In addition to geotour-guides within the Geopark's staff, year on year, between 10 – 20 certificated guides have become official Geopark Partners. For a modest annual fee, they are allowed to use the Bakony-Balaton Geopark Partner logo and their guided geotours are promoted by the Geopark. They can also take their geotour participants to some visitor centres and interpretive sites at a discounted entrance fee.

Some of the Geopark Partner guides also provide geotours in English and German. It is worth mentioning that Veszprém, the largest city in the Geopark with a fantastic geoheritage, will be the European Cultural Capital of Europe in 2023, and we are ready (and happy) to welcome many visitors from abroad. Our geotour-guides are eager to present the geological wonderland of Bakony-Balaton UNESCO Global Geopark! You can read about them and their geotours at [www.geopark.hu](http://www.geopark.hu).



A volcanic  
geosite along  
the “Route of  
Fire” nature  
trail.  
(Photo by Barnabás  
Korbély)

Barnabás Korbély, [korbely@geopark.hu](mailto:korbely@geopark.hu)

## UNESCO Global Geopark Harz · Braunschweiger Land, Ostfalen, Germany

# UNESCO Global Geoparks target cooperation



The Chairman of the Odsherred UNESCO Global Geopark Michael Kristiansen (left) and District Administrator Thomas Brych present the first Geopark information panel with Danish translation at the Lutter Basin site.  
(Photo by Dr. Klaus George)

Recently, representatives of the Danish UNESCO Global Geopark Odsherred visited the Harz region with the aim of building an international partnership. The result of a joint project presented by the delegates of the Danish Geopark and the UNESCO Global Geopark Harz · Braunschweiger Land · Ostfalen is represented by a new Geopark information panel with texts in German and Danish. The Danish Geopark's geologist, Jakob Walløe Hansen, prepared the Danish translation of the German text. The panel provides information about the geological development of the Lutter Basin, in the northern foreland of the Harz Mountains, together with the regional history. In the 17<sup>th</sup> century King Christian IV of Denmark fought at this site against the forces of the Catholic League. He only escaped with his life because his General Fuchs von Bimbach, in protecting the king's back, lost his own life. At the new panel, District Administrator Thomas Brych welcomed the Danish guests and the representatives of the municipality of Lutter am Barenberge. Almost 400 years after the great battle, a peaceful partnership with the Danish UNESCO-Geopark should be established. The visit was the first step on this path.

To get to know the UNESCO Global Geopark Geopark Harz · Braunschweiger Land · Ostfalen better, the guests visited different sites. In the Zinnfigurenmuseum Goslar they saw a reconstruction in

miniature of the Battle of Lutter am Barenberge. The museum is also one of the official Geopark Information Centres. The Danish guests were very interested in the cooperation between the Geopark and tourist companies. Erdmute Clemens, Managing Director of Wernigerode Tourismus GmbH, was pleased to state that *"We are recognized as an official information point of the UNESCO Global Geopark and keep all publications in readiness. This allows us to offer our guests a good overview of natural treasures and interesting sights throughout the Harz region."* She added that most foreign guests in Wernigerode come from Denmark or the Netherlands.

The programme also included a visit to the Geopark stele in Heimburg. It was established to improve the visibility of the Geopark for motorists. There are now more than 20 Geopark steles in the Harz region. *"This is a good idea that we could implement in our area as well"*, said Hans-Jørgen Olsen, director of the Odsherred UNESCO Global Geopark.

At the end of their visit, the Danish guests visited the old town and the collegiate church of Quedlinburg as well as the Geopark's office. District Administrator Martin Skiebe looked ahead optimistically: *"We want to sign a partnership agreement on our return visit to Denmark in May 2020."*

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Translation: Fiona Giebel

Photo taken at the meeting in the Tourist Information Centre Wernigerode.  
(Photo by Isabel Reuter)



The Geopark Stele in Heimburg, a stimulating idea for implementing similar road signs in Odsherred UNESCO Global Geopark.  
(Photo by Isabel Reuter)

# Katla UNESCO Global Geopark, Iceland

## Raising Awareness about our Geological Heritage through Cooperation

Commemorating the catastrophic eruption of the Katla Volcano in 1918



**1. Approximately 400 participants attended the Katla 100 conference, held in the sports hall of Vík.**

**K**atla UNESCO Global Geopark is located in one of the most volcanically active areas in Iceland where active volcanoes reside under ice-sheets and during eruptions glacier outburst floods (jökulhlaup) are common. Katla is the name of one of the most dangerous volcanoes in Iceland and is known globally through the eruption of Eldgjá, 939 AD. Katla erupts on average every 40-80 years and its destructive forces relate to volcanism within its large ice-filled 600-750m deep and 10 km wide caldera resulting in phreatomagmatic eruptions accompanied by ashplumes and catastrophic „jökulhlaup“ flooding. Mýrdalssandur, the dessert east of the glacier, used to be home to a fertile area with farming communities which has been destroyed by repeated glacial flooding throughout the centuries.

On the 12th of October, 1918 as farmers were preparing to gather their sheep for winter, Katla suddenly awoke. The eruption started with earthquakes followed in a matter of hours by the formation of an ashplume with lightning and poisonous gases and a glacier flood. The powerful „jökulhlaup“ flood, which was filled with debris and large chunks of ice originating from the glacier, scoured everything in its path. There was so much debris that the coastline of Iceland actually extended a few kilometres to the south. This eruption is one of the largest and most powerful eruptions in the 20th century.

In October 2018, a hundred years had passed since the occurrence of this eruption. To commemorate this event, Katla Geopark hosted and

co-planned an open and free two-day conference in the small coastal town of Vík. Nationally recognized experts were brought together from several disciplines to educate the public, addressing various topics linked to Katla, the effect the eruption had on the area and what would happen if Katla should erupt again in a similar way today. Everyone who attended received a printed book of abstracts which was also published online with free access.

The population of Vík nearly doubled as roughly 400 members attended, travelling from all over Iceland and thousands watched the live-stream online. GEO-schools in Katla Geopark participated in a special „hands-on“ education programme led by geohazard experts, introducing monitoring equipment and various procedures. On the second day, two guided field trips with both local and expert guides were offered. The local people were actively involved. They assisted the Geopark in planning and promoting the conference and shared their knowledge in talks, poster displays, and in guiding field trips. Local produce, artwork and food were on display, and various special offers in the town were also included. The conference was a perfect platform to raise awareness about the geoheritage and geohazards, and provided a great opportunity to strengthen the bond between local people and academia, a great „grass-roots conference“!

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## Adamello Brenta UNESCO Global Geopark, Italy



# Adamello Brenta Geopark launches “Plastic Free”, a campaign to reduce plastic waste together with public organizations

The Adamello Brenta UNESCO Global Geopark launched the “Plastic free” campaign by proposing that public organizations within the Geopark’s territory should banish the use of disposable plastic. Beginning in June 2019 with a letter addressed to the 30 municipalities and 4 districts of the Adamello Brenta area, the Geopark invited the public organizations to share a worthwhile project which aims to progressively eliminate the use of disposable plastic in public buildings (town halls, schools, etc) and from events promoted by touristic bodies that are supported by public funding. In the letter, the Geopark appealed to the responsibility of public bodies, also referring to advice from the European Community, regarding the increasing problem of plastic waste in the environment. The negative impact of plastic waste in polluting the ecosystem at a global level is increasingly obvious and alarming, as is the discovery of microplastic particles in apparently pristine environments such as high altitude glaciers. The proposal has two aims. Firstly, for the Geopark’s municipalities and public bodies to sign a protocol committing them to reduce plastic waste to a minimum level by the end of 2020. Also to raise awareness of the protocol among local touristic associations that organize public events. Reducing plastic waste can be achieved by replacing plastic cups and plates with biodegradable or even reusable crockery, and also by organizing educational campaigns in schools to raise awareness of the need to address this issue. Secondly, the Geopark will give each municipality 1,000 kits, each containing totally biodegradable crockery, cutlery sets and napkins for use during social events organized in the Adamello Brenta territory. In this way the municipalities can inform the local associations organizing such events and can also encourage and raise awareness among participants of the need to abandon plastic and adopt the use of eco-friendly materials during

A formal moment in which the “plastic free” kit is given to mayors from the local municipalities.



Traditional food served in “plastic free” containers.

events and in their daily lives. A choice that the Adamello Brenta UGGp already made 10 years ago. One of the Geopark’s roles is to encourage public bodies inside the Adamello Brenta region to adopt good practices and behaviour that protects the environment.

At the launching of the project, the Adamello Brenta organized an outdoor event in the heart of the Geopark where all the people involved could meet and discuss the important issue of plastic waste.

To finance this and other related projects, the Executive Board of the Adamello Brenta Nature Park and UNESCO Global Geopark has recently established the “Incentive Plan 2019”.

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The Geopark’s plastic free cup.



# The contribution of Arouca Agricola & Geofood initiatives for Sustainable Development in Arouca Geopark



**Farmers, contributors to the Geofood initiative in Arouca UGGp, display their products to the public.**

In order to maintain its leading position as a sustainable development territory and significance as a geotourism destination, the Arouca UNESCO Global Geopark must respond to challenges created by new market trends in supply and demand. At the same time it is imperative to prepare for the future, to differentiate and create more additional value and become increasingly competitive. In achieving this, a strategy involving a short food supply chain could make a difference.

Since 2017, Arouca Agricola & Geofood initiatives were developed in the Arouca UGGp integrating agrofood, territory, education, tourism, health, sustainability and flavour and promoting healthy lifestyles.

The Arouca Agricola initiative currently has 62 members consisting of small local farms that have provided more than 50 tons of fruit and vegetables during the last three years.

The Geofood initiative was implemented as a response to the promotion of local food, local development and the promotion of healthier and sustainable lifestyles. Currently, fruit and vegetables, from local farmers are consumed in six local restaurants and four primary schools supported and

recommended by Geofood.

In 2017 and 2018, the Geofood initiative received honorable recognition in two different categories at the Portuguese National contest of Food and Nutrition Awards.

Recently, Geofood Itineraries was launched as a pilot project in Arouca UGGp making it possible for tourists to discover, in Geopark guided tours, farms, local agricultural practices and local products. The tours also include information about geology, geography, biology, archaeology and history.

The Geofood initiative, which was started by the partners Magma Geopark (Norway), Odsherred Geopark (Denmark), Rokua Geopark (Finland), Reykjanes Geopark (Iceland), is becoming the official brand and network for local food development in UNESCO Global Geoparks. Nowadays the Geofood Network provides a strong opportunity to promote regional development, local resources and products for the smart, inclusive and sustainable growth of European Regions, and for simultaneously contributing to the United Nations Agenda 2030 for Sustainable development.

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One of the new interpretation panels in the English Riviera UNESCO Global Geopark.

# English Riviera UNESCO Global Geopark, UK

## A new Associate Partner Scheme for 2019



The English Riviera UNESCO Global Geopark in the United Kingdom, has signed up fourteen local businesses and coastal initiatives to become official Associate Partners of the Geopark.

A number of local organizations were invited to join the new scheme this summer and become official Associate Partners because of their cultural, environmental, historical connection or proximity to key sites of interest around Torbay.

Supporting the work of the long standing core partners, the new Associate Partners will play a vital role in raising awareness of the English Riviera's UNESCO Global Geopark designation and the importance of Torbay's geological heritage both in history and society today. They will work with the Geopark team to give local people a sense of pride in the area, and help them to further understand why a Geopark designation is so special.

Melanie Border, English Riviera UNESCO Global Geopark Co-ordinator, said "The variety of work carried out by some of our Associate Partners demonstrates how naturally inspiring Torbay is and how UNESCO Global Geoparks are not just about rocks. Each of our core and associate partners raise awareness of the unique landscape we live in, in their own special way whether it be through art, physical activity, learning or relaxation. The new scheme has already opened up a wealth of opportunities, for example a new Geopark Ambassador Artist Programme has been established by the Artizan Gallery who were one of the first organisations to join the scheme".

Associate Partners of the English Riviera UNESCO Global Geopark represent a range of categories including; Art & Culture, Coastal Conservation, Education, Exploration, and Food & Drink. Each of the partners demonstrates the Geopark's diversity to local residents and national and international visitors.

Jessica Churchill-Bissett from Torbay Cleaner Coasts Initiative said; "Being an official Associate

Partner of the English Riviera UNESCO Global Geopark means we can support each other's objectives to protect and enhance Torbay and its amazing geology and wildlife, helping it to continue to be an amazing place to live and visit, for people and wildlife alike".

To coincide with the Official Associate Partner announcement, new interpretation panels were installed throughout the English Riviera UNESCO Global Geopark with a brand new colourful and engaging design. Each of the panels tells the history of the Geopark at the site where it is located, provides suggestions for an exploratory walk together with key Geopark information. In addition, all key and associate partners have been provided with an 'A' frame board for display outside their business, which states that they are an official partner and includes details of other key Geopark sites across the entire area.

Further information can be found via the English Riviera UNESCO Global Geoparks website.

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A group of  
ambassadors  
for the English  
Riviera UNESCO  
Global Geopark.



# Driving change through green travel



### Using an electric car charging station in Ireland.

**F**orest Fawr UNESCO Global Geopark is taking action to become a greener Geopark. By aiming to travel sustainably and reduce its carbon footprint, the Geopark wants to inspire more Geoparks to consider how they travel in the future.

Fforest Fawr Geopark is currently one of twelve partners working together on the Atlantic Geoparks project, co-financed by the European Regional Development Fund through the Interreg Atlantic Area Programme, who are required to travel to coordination meetings twice a year. The last meeting took place in June 2019 at Marble Arch UNESCO Global Geopark. Fforest Fawr Geopark decided to make the trip more environmentally friendly by avoiding flying and by travelling the 730 mile round trip from Wales to Ireland mainly in an electric vehicle (EV).

Alan Bowring, Geopark Development Officer and Clarissa Price, Geopark Marketing Officer, set out from the town of Brecon in a Hyundai Kona EV. The Brecon Beacons National Park Authority, the Geopark's lead partner, currently has a fleet of four electric vehicles which the Geopark uses for as many journeys as possible. The Authority is working hard to reduce its carbon emissions and will increase its EV pool fleet from

four to seven EVs by 2020. With regards to green travel and tourism, the Brecon Beacons National Park and Fforest Fawr Geopark already has 7 EV chargers in place for public use.

The route to and from Marble Arch was plotted using ZapMap which shows charging points along the way. Ireland has an established network of charging points and whilst overnighting at accommodation and visiting geosites it was possible to charge the EV. The ferry crossing the Irish Sea was equipped with charging points which can be booked ahead. Recharging points in rural Wales are still uncommon, Ireland proved to be leading in this field, but more will be installed in Wales. However, it is necessary to check in advance that the points are a) compatible and b) available. The EV used by Fforest Fawr Geopark has a range of 280 miles and 'range anxiety' did not impact negatively on the journey.

Fforest Fawr Geopark's journeys to meetings, training and events are completed using an EV or public transport whenever it is possible to avoid flying. With project-based work, for example the Atlantic Geopark Project where partners are in different countries, video conferencing is an increasingly useful tool in striving to further reduce carbon footprints. Fforest Fawr Geopark's use of an EV vehicle to attend the meeting in Marble Arch Geopark sparked many conversations amongst project partners. Conversations that need to be continued! Trying to be 'green' is not straightforward, but is an essential contribution to address the global climate crisis. Along with other Geoparks in the Global Geoparks Network, Fforest Fawr Geopark is working hard to demonstrate that travel and tourism can be more sustainable, helping to protect the diversity of planet Earth's natural and cultural heritage for present and future generations.

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Geopark Marketing Officer

Arriving by  
Hyundai Kona  
EV at the Slieve  
Russell Hotel,,  
Marble Arch  
UNESCO Global  
Geopark.



# Magma UNESCO Global Geopark, Norway

## The GEOfood brand: Local and International cooperation



Examples of GEOfood products from UNESCO Global Geoparks.

Magma UNESCO Global Geopark (MUGGp) is a rural Geopark, located in the south west of Norway. It is characterized by a low density population and a local economy based on the fishing industry and agriculture.

Since 2015 MUGGp has endeavored to strengthen the connection and cooperation between local producers in developing the GEOfood brand together with other Nordic Geoparks. The GEOfood brand aims to emphasize the authenticity of products, producers and restaurants within UNESCO Global Geopark territories. The idea stems from the need to connect the food and raw materials with their area of provenance, highlighting the connection with the Geopark's unique geodiversity. The geological diversity within each Geopark influences the unique variety of food products which characterize Geopark territories around the globe. The brand certifies the commitment of the Geopark in working with local communities, focusing on local food as a source for a sustainable economy. It promotes rural development practices by enhancing awareness of the importance of soil diversity for biodiversity and agricultural production. GEOfood is a tool for UNESCO Global Geoparks to promote their territories in a holistic approach encompassing food traditions, cultures, agricultural processes and human rela-

tionships. The criteria for the adoption of the brand are quite simple and inclusive and Geoparks are encouraged to use these. Currently ten UGGps have implemented this approach. ([www.geofood.no](http://www.geofood.no)).

The use of the brand for international partnership is available upon request to the MUGGp [sara@maggmgeopark.com](mailto:sara@maggmgeopark.com). The GEOfood brand has been the main reason for MUGGp's involvement with the RURITAGE project financed by the European Commission within the framework of the H2020 Programme. The project focuses on cultural heritage as a tool for sustainable development in rural areas, underlining the role of the GEOfood project for local communities (more information at: [www.ruritage.eu](http://www.ruritage.eu)). In future months, Magma UNESCO Global Geopark will work closely on other project proposals involving more UNESCO Global Geoparks with the aim to expand and strengthen the GEOfood philosophy worldwide. Video of GEOfood is available on YouTube-Magma Geopark channel.

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# Ore of the Alps UNESCO Global Geopark, Austria

## Together for our Future - Climate protection is environmental protection



**Horst Ibetsberger answers the students' questions at the Ice Age Station in the Visitor Centre.**

(© Nadine Guggenberger).

**The "Ecological Footprint Table" illustrates the ecological footprint of selected nations.**

(© Horst Ibetsberger)

"Together for our Future" is an initiative of the Ore of the Alps UNESCO Global Geopark, which derives from the "Fridays for Future" movement. For a UNESCO Global Geopark it is a must to join this initiative to inform people about the global climate "Early - Today - Tomorrow".

On this occasion a LEADER project was initiated. This project focuses on climate development with posters (*Climate in Spaceship Earth*, *Snowball Earth*, *Tropical Heat before the Ice Age*, *The Ice Age in which we live*, *Green Alps - End of the Ice Age*, *Climate Change - Now and Today*), and installations (*Signature Wall*, *Ecological Footprint Table*, *Footprint Calculators*). These indoor facilities in the Geopark Visitor Centre are complemented by a theme wall in the area of the outside entrance. Here, information is provided for beginners about biodiversity, soils, insects, adapting to climate change and forest protection.

Under the slogan "Together for our Future" or "Climate protection is Environmental Protection", the Ore of the Alps UNESCO Global Geopark together with the Bischofshofen Tourism Association and the Climate Change Adaptation Region

Pongau, initiated an action day for schools. This took place at the beginning of the International Climate Week on 20 September 2019 inside and in front of the Geopark Visitor Centre in Bischofshofen.

On the day of the action, a group of experts gathered in front of the Visitor Centre to provide pupils with comprehensive information and answers to their questions. Outdoors, the use of plastic bottles in Austria and globally was demonstrated with a provocative installation.

At 8:30 a.m. the first school classes arrived! Each class, supervised by an expert, went through five stations. Initially, Markus Häupl informed the children about UNESCO Global Geoparks. Afterwards they went to the geological chronological table and to the Ice Age Station. The Climate, Weather and Forecasts Station, which was supervised by Claudia Riedl, and the Climate Change Adaptation Station, which was supervised by Nadine Guggenberger, rounded off the Climate Tour. Each station occupied the children for about 15 minutes, then the school class was passed on.

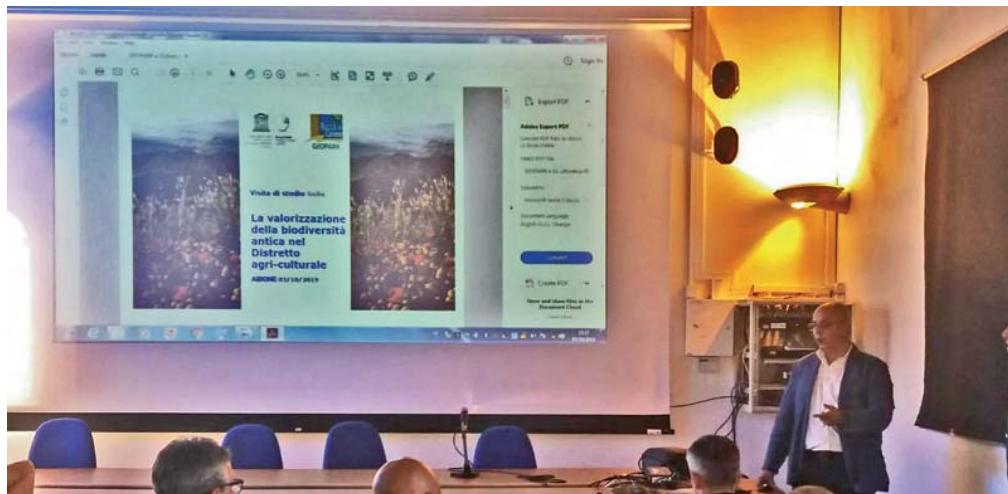
The climate action day inspired 16 school classes. 400 pupils between 6 and 16 years in age listened to the explanations of the lecturers. Countless questions were asked and answered by the experts. The Austrian National Television (ORF) broadcasted a report about the event which was also reported in many newspapers. Due to the great success and the great demand from other schools, an additional day of action will take place in autumn 2019. Further action days on other topics such as biodiversity, soils, mountain hazards etc. will follow every six months. The Climate Action Days will be included in the Geopark's calendar of events and should be imitated by as many other UNESCO Geoparks as possible.

**Horst Ibetsberger**, Geoscientist Geopark Ore of the Alps, ocaa@sbg.at, [www.geopark-erzderalpen.at](http://www.geopark-erzderalpen.at)



## The Rocca di Cerere UNESCO Global Geopark, Italy

# Hosting the study visit on “Enhancement of ancient biodiversity in the agri-cultural District”



The study visit “The valorisation of ancient biodiversity in the agri-cultural district” was held in Aidone and organized by the LEADER National Rural Network and by the Rocca di Cerere Geopark. The study visit provided a delegation of Italian Local Actions Groups (LAGs) (from Lombardy, Piedmont, Abruzzo, Sardinia, Campania) with an opportunity to share Rocca di Cerere UNESCO Global Geopark’s experience in local development. This focuses on an integrated system of geotourism which promotes the natural, environmental and cultural resources of the territory.

The visit also provided an opportunity to evaluate and spread the good practices for local development gained by the Geopark which is in a LEADER funded area. The day included an innovative visit to the archaeological area of Morgantina and the archaeological museum of Aidone, conducted by the archaeologist Serena Raffiotta. The visit focused on the concept of an “agri-cultural district”, with an emphasis on the interpretation of the cultural landscape and the cultural heritage based on a multidisciplinary approach that allows us to read the “cultural wealth” through the application of Earth sciences.

Participants in the study visit were welcomed by the representatives of the Archaeological Park of Morgantina and of the Villa Romana del Casale. Arch. Liborio Calascibetta and Dr Rosario Patané contributed actively to all the workshops. In the afternoon the delegation was hosted by Aidone’s Rocca di Cerere Factory for a debate on “Geo-tourism and its connection with Mediterranean Biodiversity”.

The debate was convened by Salvatore Troia, director of the “Rocca di Cerere UNESCO Global Geopark”, and by Giuseppe Amato, coordinator of educational and scientific activities in the Geopark. The integrated local development model called “agri-cultural district”, offers an excellent opportunity to strengthen production, support the dissemination of innovative solutions and services, and encourage the sustainable growth of the territory. The geological substratum is the “soul” and the specific element of the complex “Landscape System”. The main recommendations relate to the role of geological and geomorphological “history” in the process of identifying a territory and all its abiotic, biotic and cultural components; the relationship between the emotional and intangible landscape of historical events; the role of landscape in the history of Italian figurative and narrative arts; the cultural value of geo-tourism; the relationship between development, sustainability and security.

“Earth sciences” aim to present the history of the formation of a specific cultural landscape and its physical environment through the “geosites” and the rocks, soil and water. In a more defined social perspective, “Earth sciences” offer an opportunity to analyse a specific part of the territory, as perceived by the population, whose character derives from the action and interrelations of natural and / or human factors.

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Participants engage in the debate convened by Salvatore Troia and Giuseppe Amato.



Participants visit the archaeological area of Morgantina and the archeological museum of Aidone.

# Sitia UNESCO Global Geopark, Greece

## The Local Quality Pact: The real support for the Local Community in Sitia Geopark

The Geopark is promoted on the label of a local product.



Honey, a local product, is sold with the Geopark's label.

Through shared developments, the Sitia Geopark has, together with the cooperation of local associations and producers, formulated a standard plan – the Local Quality Pact- a trademark to support the production and services provided by the UNESCO Global Geopark.

The involvement and shared vision of the local community which can be more powerful than any legislation is a prerequisite for the sustainable development and success of any programme or project. In achieving the success of the Local Quality Pact, Sitia UGGp, expanded and modified the Geopark Management Committee by involving representatives of cultural associations, representatives from industry and from the tourism sector, restaurants, shops and voluntary groups.

What exactly is the Sitia Geopark Local Quality Pact? It is an agreement between entrepreneurs operating within the Geopark on the quality of their

products and services. Through the Quality Pact we want to safeguard and promote the identity of the region by highlighting: local diversity, traditional cultivation and processing methods, local produce, gastronomy, traditions, architecture and generally the unique culture of the region. Enterprises producing local products, restaurants and shops offering local cuisine, accommodation, alternative tourism activities, visiting wineries and farms can join this programme.

In order to obtain the Geopark's trademark, an enterprise must meet the requirements of certification and accept an inspection by the Geopark in order to confirm compliance with the trademark specifications. These include the function of the enterprises within the Geopark's territory; the legal operations to protect and grow the enterprises; their legitimacy, utilizing and highlighting the local history and traditions; the use of local products; architecture and ornamentation that conforms with the territories unique identity; promoting the whole area of the Geopark and promoting the trademark in business partnerships.

Businesses have a lot to gain:

- Free, targeted and continuous visibility.
- Recipients of the trademark are promoted and advertised by the Geopark and have priority in all actions organized to promote the Geopark.
- Businesses with the trademark will have the exclusive priority of hosting guest groups from all over the world.
- Enterprises with the trademark are promoted on the Geopark's website which has a section dedicated for certified businesses.

Visitors inspect an olive tree in a farm promoted by Sitia UNESCO Global Geopark.



Evangelos Perakis Geopark perakisv@sitia.gr

## Basque Coast UNESCO Global Geopark, Spain

## We got it!

Geo-quotes, a special way to celebrate the Green Card in the Basque Coast Geopark.

A visitor to the Geopark experiences the outcome of the Geo-quotes initiative.



The Basque Coast Geopark was successfully revalidated for another four years with the designation as a UNESCO Global Geopark. It is the second time that The Basque Coast Geopark has been able to renew its place in the Global Geoparks Network without any necessary corrective action being detected.

The news was received with enormous satisfaction by the three municipalities that make up the Basque Coast Geopark: Deba, Mutriku and Zumaia. The recognition encourages the Geoparkea to redouble efforts to preserve and promote the natural and cultural heritage.

The participation and involvement of the local population is fundamental for the sustainability of a Geopark. In order to share and celebrate this recognition with the entire community that is part of the Geopark, an innovative marketing action called Geo-quotes was designed.

The Geo-quotes strategy focused on online and offline marketing activities. Based on the pos-

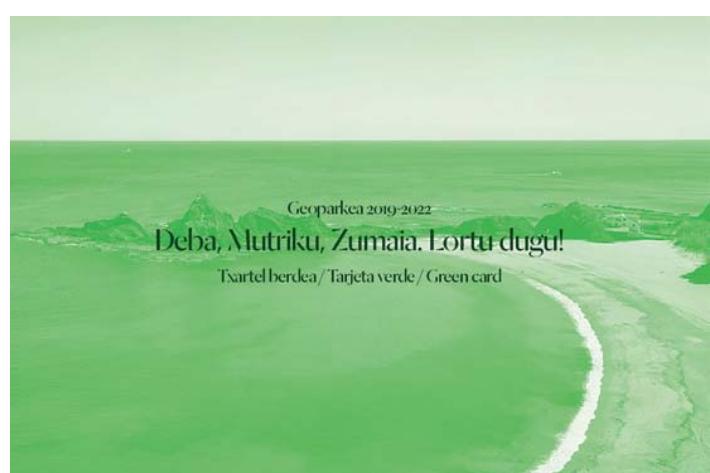
itive comments from visitors about The Basque Coast Geopark in social media and other fora, green texts were painted on the pavements and special postcards were produced and sent to the Geopark's inhabitants. Lately, pictures of the texts were posted on Geoparkea social media profiles together with the production of a video summary.

This marketing technique was considered as a way to show how lucky people should feel to be part of such an environment and to make them conscious about the importance of taking care of it. So, this initiative helped The Basque Coast Geopark to make people aware about the meaning of the Green Card and to appreciate the importance of what it means to achieve this recognition.

Geoparkea Green Card video: <https://www.youtube.com/watch?v=oKiSYPVP62s>

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The green text is displayed in the most prominent sites in town.



## Bergstrasse-Odenwald UNESCO Global Geopark, Germany

# “Fruit trees of the year”

the taste of the territory and protection of biodiversity  
(Global Agenda 2030, SDG 15).

Nowadays, everyone is talking about nature and the diversity of animals, plants and habitats. There is no doubt that their protection is vital for the survival of mankind – we are part of the ecosystem, living with and from it. Protecting local flora and fauna is an important aspect of this task. In this context, the conservation of old, regional fruit varieties is something that is close to the heart of the Geo-Naturepark Bergstrasse-Odenwald (UNESCO Global Geopark). In collaboration with the “Rescuers of the Meadow Orchard” (Streuobstwiesenretter), the Geo-Naturepark initiated the award “Fruit Variety of the Year”. This programme draws attention to our meadow orchards and their importance as a habitat for numerous species, while at the same time it serves to preserve local fruit varieties.

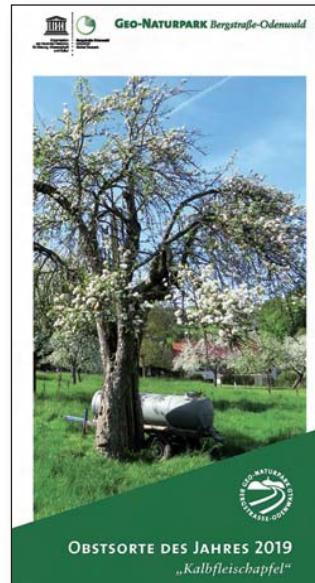
The Geo-Naturepark produces annually a free flyer as part of this programme and installs information panels for each planted tree with the aim of increasing the awareness of the local residents. Additionally the Geo-Naturepark presents each of the member communities with a “Fruit tree of the year”. The programme is augmented



The information panel providing information about the origin, time to harvest, storage time, growing conditions and use of the “Kalbfleischapfel”.



Photograph of an established “Kalbfleischapfel” tree in the Geo-Naturpark Bergstrasse Odenwald.



Geo-Naturpark Bergstrasse Odenwald flyer for the Fruit Tree of the Year 2019 – the “Kalbfleischapfel”

by a relevant product for each “Fruit tree of the year”.

The first fruit variety to be named at the start of the project in 2016 was the “Spitzrabau”, a greyish-green, white-fleshed apple, which is only rarely found growing in the Bergstrasse-Odenwald region. A planting programme has done much to improve the presence of the Spitzrabau in the region. The project partner, the distillery “Odenwälder Brände”, created an apple liqueur as an associated product.

The pear variety “Schweizer Wasserbirne”, Fruit of the Year 2017, is especially suited for producing must (unfermented juice). Now rare, it was once a common variety in the region. The associated product was a pear brandy. In 2018 a tasty variety of cherry, the “Schwarze Falter”, was named Fruit of the Year

and was planted in a wonderful cherry orchard near Bensheim. The juice was transformed into a tasty cherry liqueur. The apple “Kalbfleischapfel”, Fruit of the Year 2019, had all but disappeared from the region. Now as a result of the award, many saplings have been planted all over the region. Tasty dried apple rings were added to the product range.

The Fruit of the Year programme is the means with which the Geo-Naturepark and its partners encourage regional biological diversity. This is a continuing endeavour towards safeguarding our basis of life and protecting nature. As such the Geo-Naturepark provides an important contribution towards the Global Agenda 2030 (Sustainability Goal No. 15, Life on Land, biological diversity).

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Roland Mayer [r.mayer@geo-naturpark.de](mailto:r.mayer@geo-naturpark.de)



Planting saplings of the “Kalbfleischapfel” in the Fruit of the Year programme 2019.

## Burren and Cliffs of Moher UNESCO Global Geopark, Ireland

# The Leading Role of Women in the Burren and Cliffs of Moher UGGp

Gender equality and the empowering of women are key components of sustainable socio-economic development championed by UNESCO and UNESCO Global Geoparks. Across the world and in all cultures equality of opportunity and pay for women, while improving, is still aspirational in many areas. Within the Burren and Cliffs of Moher UNESCO Global Geopark, one of our main partner organizations, the Burren Ecotourism Network (BEN), has developed and grown largely through the activities of women since it was first established in 2010. BEN has been an integral part of all our national and international awards for local food product development and best practice in environmental awareness and management (EDEN Gastronomy award 2016; National Geographic Destination Leadership award 2016; Chambers Ireland Local Authority award 2018). While the activities of BEN have received a lot of applause and attention, the key role of the women behind the scenes and the role of women in other key agencies have not.

We present here a list of some of the female leaders in our community, a brief outline of what they do and we suggest that having a significant number of female leaders and role models is an example of best practice for all Geoparks

### Geraldine Enright - Director: Cliffs of Moher Visitor Experience

- Brigitta Curtin - Owner: Burren Smokehouse
- Eva Hegarty - Owner: Burren Free Range Pork and Glamping
- Frances Connole - Owner: Burren Fine Wines
- Helen Browne - Owner: Doolin Cave
- Megan Grindrod - Officer In Charge: Doolin Coast Guard
- Nuala Mulqueeny - Owner/Director: Aillwee Cave/Birds of Prey/Burren Gold cheese
- Joan Hamilton - Marketing Director: Doolin2Aran Ferries
- Mary Hawkes Greene - Owner/Director: Burren College of Art
- Doreen Drennan - Owner: Doreen Drennan Art
- Sarah Foust - Owner: Foust Art Gallery
- Siobhán Power - Geologist: Geological Survey Ireland
- Sharon Malone - Sales Manager: Falls Hotel
- Roisin Garvey - County Councillor
- Joan Tarmey - Acting Tourism Officer: Clare County Council
- Tina O'Dwyer - Owner/Director: The tourism Space
- Karen Foley - Environmental Awareness Officer: Clare County Council
- Mercedes Varona - Owner/Founder: Bee Loved Skin Care



- Karen Courtney - Owner: StoneCutters Kitchen Restaurant
- Triona Malony - Events Coordinator: Hotel Doolin
- Barbarea Marin - Owner: Casa Ceoil B&B
- Sonja O'Brien - Owner/Director: Boghill Centre
- Bríd Fahy - Owner/Director: Linalla Ice Cream
- Mona Hynes - Vice Principal: Lisdoonvarna Secondary School
- Áine Martin - Head of Sales: Hotel Doolin
- Kaye Maahs - Artist/Owner: [www.kayemaahs.com](http://www.kayemaahs.com)
- Ciara O'Halloran - Co-founder: Redbank Seafood Company
- Siobhan King - Client Services Officer Wild atlantic Way: Fáilte Ireland
- Margaret Cotter - Rural Development Officer: Clare County Council
- Not included in picture:*
- Raquel Noboa - Owner: Fifty Shades Greener
- Laura Cotter - Communications Coordinator: EU –Interreg Atlantic Geoparks Project
- Emma Glanville - Ranger: National Parks and Wildlife service
- Penny Barlett - Ranger: National Parks and Wildlife service
- Marie McGauran - Owner: Burren experience Guided walks
- Mary Gardiner - Owner: Ballinsheen House
- Joanna McInerney - Director: Burren Outdoor Education and Training Centre
- Orla Vaughan - Owner: Vaughan's Inn
- Sadie Chowen - Co-owner: Burren Perfumery

**Introducing some of the female leaders in Burren and Cliffs of Moher UNESCO Global Geopark.**

**Dr Doyle acknowledges the support of Clare County Council and the Geological Survey Ireland.**

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# Chablais UNESCO Global Geopark, France

## A Question of Marketing in the Chablais UNESCO Global Geopark, France



**The Tourist Office and Geopark Partners Workshop, May 2019.**

The Chablais territory in France worked hard to integrate into the Global Geopark Network in 2012. Many of the first initiatives driven forward by the newly designated Geopark were designed to continue its integration within the territory and improve the Geopark's visibility. Following the creation of the new UNESCO label "UNESCO Global Geoparks" in 2015 the Chablais sought to clarify how it marketed the brand. The Geopark started to reconsider how to promote the UGGp label and communicate with greater efficiency with its local population and visitors. The Chablais UGGp is already a very well frequented mainstream tourist destination.

Generally high numbers of the local population and politicians at different levels are not only able to recount that the Chablais is a UNESCO Global Geopark but are also proud of this fact. However, when asked for a definition, all parties found a response difficult to formulate. Generally, answers were founded upon personal experience: individual visits to geosites, geosite events, training courses for local guides, and educational activities in schools. When working with partners in tourist offices or visitor attractions, they struggled to pinpoint the Chablais UGGp's brand promise.

The Geopark, aware of this shortfall, sought to revise its communication and marketing. Initially, it sought to harmonize its work with the existing policies presented in documents and websites produced by UNESCO and the Global Geopark Network. However, having studied the general content and communications presented on the

different platforms, the Chablais UGGp needed additional marketing elements. Consequently a communications and marketing consultant was engaged to assist in the development of the Geopark's role.

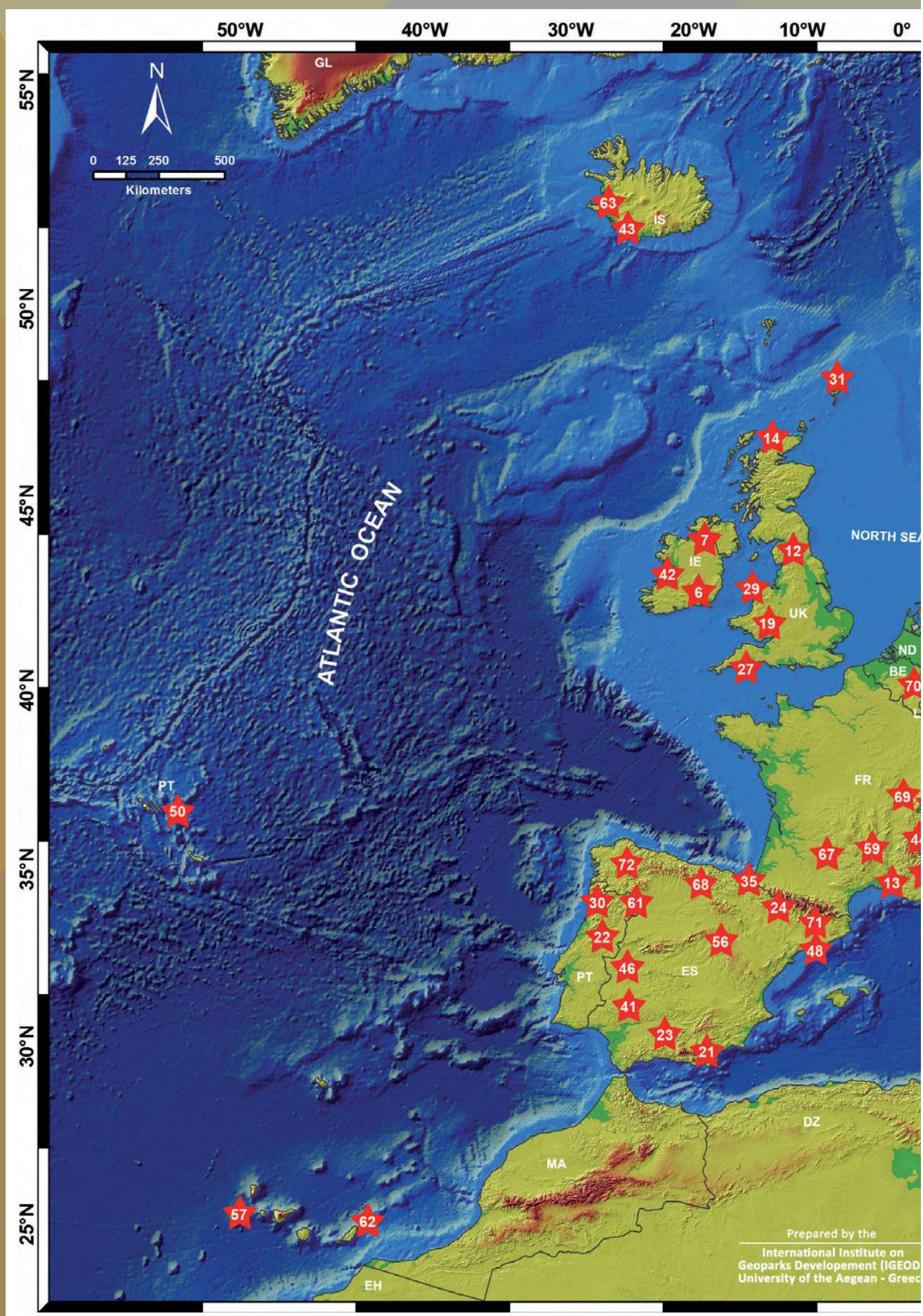
Initial work established that the priority audience was our local population and visitors who would be experiencing the Chablais in a leisure capacity. This audience needs to quickly understand the core Geopark values and what it offers. A series of workshops were organized with participants from tourist offices and the Geopark's partners. Working together, stakeholders were encouraged to express what they liked and understood about the Geopark and they also explored visitor needs in the territory. A second workshop looked at all the different offers including promotional material, the Geopark partnership scheme and our geosites. It also probed what the Chablais UGGp does not offer, but that clients seek.

The workstream concluded with the development of a series of action points for the Chablais UGGp to address. These involved creating a communication kit for our tourism partners (A Geopark Language Toolkit) and a set of guidelines for our institutional partners (mainly our 62 municipalities). The actions are being addressed and new toolkits and training programmes are being launched. In order to assess the success of this initiative, Chablais UGGp will monitor and compare the effectiveness of integrating these actions with those of our different partners.

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# The European Geoparks Network



The Network consists of 74 Geoparks in  
[www.european-geoparks.net](http://www.european-geoparks.net)

# arks Network today



24 European countries (February 2020)  
[eugeoparks.org](http://eugeoparks.org)



European  
**Geoparks**

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3 Lesvos Island Geopark	GREECE	40 Muskauer Faltenbogen / Łuk Mużakowa	GERMANY & POLAND
4 Psiloritis Geopark	GREECE	41 Sierra Norte de Sevilla Geopark	SPAIN
5 TERRA.vita Geopark	GERMANY	42 Burren and Cliffs of Moher Geopark	IRELAND
6 Copper Coast Geopark	IRELAND	43 Katla Geopark	ICELAND
7 Marble Arch Caves Geopark	IRELAND & UK	44 Massif des Bauges Geopark	FRANCE
8 Madonie Geopark	ITALY	45 Apuan Alps Geopark	ITALY
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12 North Pennines AONB Geopark	UK	49 Bakony-Balaton Geopark	HUNGARY
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14 North West Highlands Geopark	SCOTLAND, UK	51 Karavanke/Karawanken Geopark	SLOVENIA & AUSTRIA
15 Swabian Alb Geopark	GERMANY	52 Idrija Geopark	SLOVENIA
16 Harz – Braunschweiger Land Geopark	GERMANY	53 De Hondsrug Geopark	NETHERLANDS
17 Hațeg Country Dinosaurs Geopark	ROMANIA	54 Sesia Val Grande Geopark	ITALY
18 Beigua Geopark	ITALY	55 Kula-Salihli Geopark	TURKEY
19 Fforest Fawr Geopark	UK	56 Molina and Alto Tajo Geopark	SPAIN
20 Bohemian Paradise Geopark	CZECHIA	57 El Hierro Geopark	SPAIN
21 Cabo de Gata – Níjar Geopark	ANDALUCIA, SPAIN	58 Ore of the Alps Geopark	AUSTRIA
22 Naturaejo da Meseta Meridional Geopark	PORTUGAL	59 Monts d'Ardèche Geopark	FRANCE
23 Sierras Subbéticas Geopark	ANDALUCIA, SPAIN	60 Odsherred Geopark	DENMARK
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34 Magma Geopark	NORWAY	71 Origens Geopark	SPAIN
35 Basque Coast Geopark	SPAIN	72 Courel Mountain Geopark	SPAIN
36 Cilento, Vallo di Diano e Alburni Geopark	ITALY	73 Vis Archipelago Geopark	CROATIA
37 Rokua Geopark	FINLAND	74 Trollfjell Geopark	NORWAY

# Sobrarbe-Pirineos UNESCO Global Geopark, Spain

## Project Mallata: a combined effort to keep our heritage alive in the Sobrarbe-Pirineos Geopark

Starting the work on restoring the Mallata Carduso.



Think about the Pyrenees. Think about mountains, folds and lakes, dense forests and the flight of the bearded vulture. But keep in mind that this landscape is also influenced by human beings.

Enormous upland areas of grassland have supported livestock during the summer months for thousands of years. Sheep, goats and cows have, like any other agent, shaped the landscape. The Pyrenean shepherds have developed a culture deeply rooted in the mountains of the Sobrarbe-Pirineos UNESCO Global Geopark. However, in the last decades, the cattle industry has declined dramatically. Every year, fewer shepherds and fewer animals spend the summer in the mountains, consequently, part of our culture is disappearing.

This decline does not only affect animal husbandry, it also impacts on the areas' intangible heritage including tales and legends, toponymy, traditional knowledge about the weather and also the loss in expertise in building traditional shepherd's houses: the *mallatas*.

*Mallatas*, in Aragonese language, are much more than a shepherd's house. They are shelters where the sheep are kept at night and are also used for milking or making cheese.

Some of these buildings are deteriorating through lack of use coupled with the severe climate conditions in the mountains. To save some iconic examples, the Geopark launched the *Mallata* Project. The project's objectives were to rebuild a shepherd's hut, recover the skills required for dry stone building, communicate traditions and historical information about the shepherding culture, show the relationship between the *mallatas* and the geological and natural environment and last, but not least, to develop a strong group spirit in the volunteers participating in the project.

In order to achieve these goals, many activities



The team of volunteers celebrate a job done well!

were scheduled. Conferences about the shepherding culture and the ecology of grazing areas were organized together with a call for volunteers to work in the *Mallata Carduso*. Fieldtrips were arranged for the general public and for friends of the Geopark to visit the rebuilt *mallata* and to explain the geological, biological and other features around the site of the *mallata*.

All these activities were organized in close collaboration with the Ordesa and Monte Perdido National Park and the Pirineos-Monte Perdido World Heritage Site.

The main activity, the restoration of the hut, took over two weeks. More than 20 local volunteers worked under the direction of a local dry stone master who shared the knowledge of dry stone walling, recently declared by UNESCO as a component of intangible heritage. All the volunteers were extremely happy to have helped to save a part of their own heritage and culture.

Shepherding is an important part of our identity. The Geopark is totally committed to help in the preservation of this activity as well as its cultural imprint on the landscape. New buildings and new activities are currently being developed in Sobrarbe-Pirineos Geopark. The sound of the sheep shearing is still alive!

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## Vulkaneifel UNESCO Global Geopark, Germany

# An energy crop for enhancing biodiversity and mitigating soil erosion in Vulkaneifel Geopark



More than 8,000 biogas plants in Germany support rural economies and the transition towards renewable energy production. However, the large scale cultivation of whole crop maize, which delivers the highest yields of biogas, has a range of negative side effects in terms of biodiversity and soil erosion. As part of the project LIFE-IP ZENAPA the cultivation of alternatives to maize will be supported in the Vulkaneifel UNESCO Global Geopark.

As part of the ZENAPA partner project MUNTER, which seeks to reduce soil erosion during heavy rain events, a farmer in Vulkaneifel is testing the cultivation of the promising alternative energy crop "Cup plant" (*Silphium perfoliatum*) or "Silphie" in German. Analyses comparing the volume of the biogas produced from cup plants and maize vary. Currently a 20% reduction in biogas production using cup plants is anticipated. However, trials using cup plants show a range of positive side effects, which are clear and visible in the field:

The crop is perennial over a period of 10 to 15 years, reaches a height of up to 3 metres and once it is established, a deep root system stabilizes the soil. This is crucial in spring when heavy rain events occur, and are predicted to increase in response to climate change. Conventional maize plantations are prone to soil erosion during the spring rains be-

cause the plants are small and their roots are not fully developed. Soil erosion from maize plantations has damaged agricultural land and has impacted on the surrounding villages in the Vulkaneifel in recent years. That the Cup plant is perennial also means less tillage, fuel consumption, compaction and disturbance of the soil. The large leaves form small cups around the stem of the cup plant; these fill with water which is used by the plant during dry spells. The bright yellow flowers attract insects including honeybees, bumblebees and butterflies, especially in the evening when the fields are highly frequented by insects. In addition, at a time when the landscape offers only a low supply of food, the flowers and nectar of the cup plant are still available to insects. For wild boars, which cause damage and yield loss in maize fields, the cup plant is a poor and undesirable source of food.

The farmer trialling the cultivation of the Cup plant in the Vulkaneifel manages a biogas plant which produces electricity and supplies heat to more than 70 households in the village. Producing the heat from the cup plant has the potential to increase significantly the sustainability of the villages' heat supply.

**Teresa Benzing, Martin Krämer, Andreas Schüller**  
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**Dr. Andreas Schüller, Head of Vulkaneifel UGGp and Heinz-Peter Thiel, District Chief visiting the cup plant plantation of local farmer René Blum.**



**The cups formed by the leaves around the stem collect water which can be used by the plant during dry spells.**



**Like the honey bee, various insects are attracted by the flowers of the cup plant.**

# Chelmos-Vouraikos UNESCO Global Geopark, Greece

## Crossing trails and meeting geosites



**The trail from  
Mega Spilaio to  
Xerokampos.**

Chelmos-Vouraikos Geopark is located in the North Peloponnese, 100 km from Patras and 200 km from Athens. It has an area of 647 km<sup>2</sup> and a unique geological history with exceptional landscapes with canyons, caves, ravines, springs, lakes, rivers and torrents combined with cultural heritage and an excellent scientific, educational and tourist infrastructure.

Highlights of Chelmos-Vouraikos Geopark include Vouraikos Gorge with its Rack Railway, the Cave of the Lakes with 13 amazing underground lakes, Mega Spilaio Monastery, "Balcony" of Styx Waters forming an impressive waterfall, Tsivlos Lake, the artificial lake of Doxa, Aroanios River Springs fed by the waters of Feneos Basin, the Ski Centre, the impressive Telescope of Aristarchos and others.

The "geosites" are the products but also the records of the geological evolutionary history of the area. Forty different geosites of national and local importance have been featured including unique rock formations, fossil sites, caves and other karst features, gorges, lignite deposits, rocks with impressive folds and faults, water features such as lakes, rivers, springs and others. Chelmos-Vouraikos Geopark has tried to improve the infrastructure concerning its visibility by providing new signs with innovative and minimal design that in-

**A guided tour, with  
students, of the  
educational trail  
Agios Ioannis-  
Keramidaki.**

tegrate with the landscape, enhance the visitors' awareness and arouse the interest of geotourists to visit and explore the Geopark.

The Management Body of Chelmos-Vouraikos, as the responsible authority of the Protected Area, carries out guided tours within the Geopark, hosting primary and secondary school students, university students, various other groups and adults. Guided tours include presentations together with information material about the natural and cultural richness of the protected area at the Geopark's Information Centre and field trips accompanied by the specially trained staff of the Management Body. The aim is to bring young and older people closer to nature in order to experience the richness and exceptional value of bio-diversity and geo-diversity of Chelmos -Vouraikos Geopark and to educate people to respect and conserve nature.

Chelmos-Vouraikos Geopark is an ideal destination for implementing environmental education programmes focused on the geo-environment and the interaction of abiotic and biological factors. The visitors walking the trails experience the diversity of the abiotic and biotic nature of the Geopark. They have an opportunity to observe and identify various geological landforms and structures, and geological processes involved in the formation of karstic phenomena (caves), lakes, landslides and other features.

By promoting the local bio-diversity and geo-diversity, the Management contributes ceaselessly to the promotion of alternative tourism, environmental education and protection and the promotion of Chelmos-Vouraikos Geopark, with numerous benefits for the local community.

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## UNESCO Global Geopark Styrian Eisenwurzen, Austria



# A New Visitor Guidance System in the Green Heart of Austria



**GeoVillage Gams** – the newly rebuilt GeoWorkshop including a new exhibition and information desk. It is also the new starting point for the Noth Gorge and Kraus Cave.  
 (© C. Scheucher)

As a wild and romantic Alpine area with many rivers, creeks, springs, lakes, marshes, gorges and caves, we are facing the challenge to protect our natural wonders while giving people the chance to discover them. Within several projects, the UNESCO Global Geopark Styrian Eisenwurzen developed and implemented a new visitor guidance system where we:

- created a new corporate design and identity for our Nature- and Geopark,
- installed and will install more interactive information points in every municipality and road signs along main roads,
- published a brochure with recommendations connected to certain sites and activities as well as geological treasures and animals living in the Geopark,
- published three posters in English and German ('Fossils in Geoparks', 'Minerals in Geoparks', 'Geosites in Geoparks') concerned with the responsible and respectful treatment of the geological heritage (within our Interreg Danube GeoTour Project)
- reshaped the visitor management system of our two most popular geosites, the GeoVillage Gams and the River Salza.

**GeoRafting on the River Salza .**  
 (© Stefan Leitner - Gesaeuse)



### Investments at the GeoVillage Gams

The GeoVillage Gams, our main geosite, includes several spectacular and unique geological features in one valley. Here visitors can find the largest gypsum cave in German-speaking countries and by following the wooden walkway along the dramatic Noth Gorge experience the feeling of flowing with the river.

The already accessible GeoVillage Gams now has an official entrance with an information point, exhibition, shop and cash desk, while new information panels and trail signs have been sited in the Noth Gorge.

### New management system for the River Salza whitewater sport area

The breathtaking River Salza is the most famous area in Austria for whitewater sports, mainly rafting and kayaking. One of the main problems concerning visitors is entering the river at vulnerable sites.

At first, the Geopark implemented a survey of the flora and fauna, and based on the results, selected, rebuilt and clearly defined rafting entrances and parking areas. The parking fee allows the local municipalities to hire staff to control the use of the area. For visibility and conservation purposes, new information panels, trails and promotional materials were produced. We introduced GeoRafting to provide more information about the cultural and natural heritage of the area to the rafting guides and to visitors. Education is still the most powerful tool for preserving nature.

Supported by the Federal Ministry for Sustainability and Tourism, the State of Styria and the European Union (LEADER). The Interreg Danube GeoTour project is co-financed by European Union funds (ERDF, IPA).

**More information:** [www.eisenwurzen.com](http://www.eisenwurzen.com)  
[www.interreg-danube.eu/danube-geotour](http://www.interreg-danube.eu/danube-geotour)

Check us out on facebook: Natur- und Geopark Steirische Eisenwurzen

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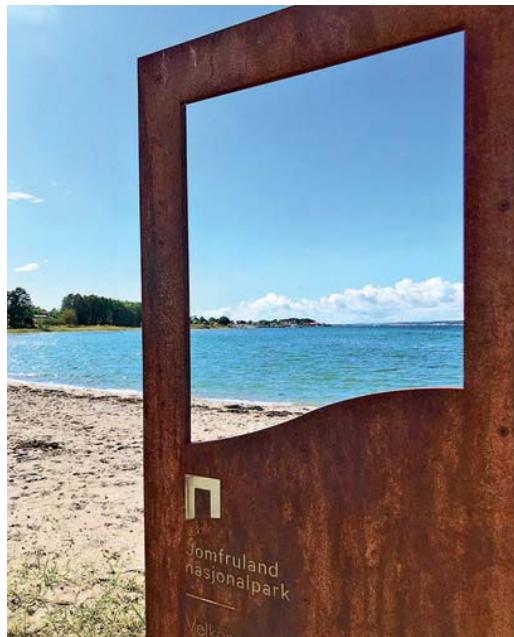
**Oliver Gulas MSc:** oliver.gulas@eisenwurzen.com

## Gea Norvegica UNESCO Global Geopark, Norway

# Gea Norvegica Geopark cooperates with the new Jomfruland National Park



A section of  
pebble beach  
in the new  
Jomfruland  
National Park.



Welcome to  
Jomfruland  
National Park.

Jomfruland is one of the most exotic islands along the coast of southern Norway, and a very important site within the boundaries of Gea Norvegica UNESCO Global Geopark. Recently the island with its surrounding islets and seabed was designated as a marine national park.

Jomfruland National Park consists of an area of 117 km<sup>2</sup>, with a rich natural diversity both above and below the shoreline where the seabed is by far the largest component of the park. The main goal for any national park in Norway is to protect and secure the environment, landscape and cultural heritage for the future. However, protection and use must go hand in hand, therefore the Geopark and the National Park work together in providing knowledge and a sense of pride-in-place for its inhabitants and

visitors. Important geo-sites have now also received a higher degree of protection by law. The islands have for a long time been a popular tourist destination during the summer season, so the main focus is how the tourists can use and leave the area leaving nothing but their footprints. The park is perfect for boating, kayaking, hiking, bird watching, scuba diving, swimming and fishing, and if you just want to relax in beautiful scenery there are plenty of suitable sites. The Geopark organizes hiking trails with information on the environment and cultural monuments on the main island. Gea Norvegica also exhibits the original "rock family" on Jomfruland.

**Bjørn Magnus Mowinckel Nilsen Narum**  
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Glacially  
polished rocks  
along the  
shoreline of the  
National Park.

# **Sabre-toothed Tiger Trail and Leewal Walk-Through-Time**

**Children and adults experience the Ice Ages in 3D in Hondsrug Geopark**

**The Leewal Walk-Through-Time in the Hondsrug UNESCO Global Geopark.**



## **New Trails**

In September De Hondsrug UNESCO Global Geopark opened two new educational trails near Exloo, on the crest of the Hondsrug. The shorter trail is located in and around the Hunzebos, a local forest. For children there is an adventurous, winding trail through the forest and over the Ice Age hills, with 10 play objects where they can swing, jump, scramble, play and can even compete with a sabre-toothed tiger. On the longer trail of 7.5 kilometers adults and children alike can travel through the 470,000 years of earth's history which is visible here.



many glacial and archaeological remains, such as dry valleys and part of the enigmatic Leewal Ridge.

## **Origin of the dry valleys**

During the summers in the last Ice Age the snow on the ground melted and the upper metres of the frozen ground thawed. The melt water washed away some of the muddy soil and over time valleys were formed that grew wider and deeper each summer. After the Ice Age the ground thawed completely and the surface run-off water could sink into the ground and the valley dried up. At the Hunzebos you can see a nice example of such a 'dry valley'.

**A swing and tightrope provided for children to play along the adventure trail in the Hunzebos Forest.**

**The 3D app with virtual and augmented reality providing animations about the geological and cultural history of the area along the Sabre-toothed Tiger and Leewal trails in the Hunzebos Forest.**

## **Get closer by using the app with virtual and augmented reality**

For both hikes we developed an app, adding virtual and augmented reality and interesting animations about the geological and cultural history of the area. This makes the experience more intense and exciting. The app also contains games in which the children can pit their wits and skills against the Sabre-toothed tiger.

The hikes are developed in a scenic area where many of the special features of the Geopark can be found: glacial hills and valleys, tumuli, a hunebed (a megalithic grave monument) and picturesque towns. The Hunzebos Forest also contains

## **Leewal: an enigmatic ridge**

And then there is the enigmatic ridge of the Leewal winding through the country. We used to think it was an esker. Eskers originated at the end of the Saale Glacial Period, when melt water eroded tunnels beneath the ice. These tunnels filled up with sand and gravel. When all the ice had disappeared, the mix of sand and gravel was left behind as a ridge in the landscape. Now the origin of the ridge is under investigation. It could also be a chain of sand dunes.

## **Cooperation**

In this project we collaborated with local organizations, businesses, inhabitants and school children. The children advised us on the trail, the sites for activities and the play objects. And of course they participated in the opening event of the trails in September.



**Cathrien Posthumus,**  
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# Idrija UNESCO Global Geopark, Slovenia

## A New Visitors Centre Featuring the “Written in rocks” Exhibition, an excellent starting point for exploring Idrija Geopark



**The part of the exhibition dedicated to natural values: the vulnerability of karst landscapes (left), the morphology of the Idrija area (right) with a dinosaur in the background.**  
 (Photo by Bojan Tavčar).



**Children exploring the Earth's interior and learning about convection.**  
 (Photo by Bojan Tavčar).

Idrija Tourism Board, UNESCO Global Geopark Idrija, is the leading partner of the Danube Geotour Project extending from January 2017 until the end of 2019. The main objective of the project is to work on strategies and practical solutions (pilot actions) to develop and to motivate activities in geodiversity/geoheritage and to apply positive market trends for sustainable tourism development in 8 Geoparks in the Danube region.

The 11 partners include 7 UNESCO Global Geoparks (UGGPs), a national geopark, an Institute for Nature Conservation, a regional tourism organization and a university, as well as three associated strategic partners.

The important components of this demanding project included two work packages involving pilot actions. The first was dedicated to the creation of geo-products in partner areas, resulting in a variety of products defined as geo-products in a wide-ranging debate in the partner consortium. The term geo-product has been presented at European Geopark and UNESCO Global Geopark conferences and is ready to be applied in other UGGPs.

The second work project was dedicated to interpreting heritage. Project partners developed interpretation sites that were either modern (digital) or

traditional and understandable to non-geologists. Idrija UNESCO Global Geopark designed a Visitors Centre interpreting how Earth's forces shaped Idrija's landscape, influenced its natural history and consequently the history, lifestyle and character of its people. The exhibition aims to encourage visitors not to concentrate only on the main tourist offer in the town but also to explore the countryside, to experience the natural and cultural heritage, and through contact with out-of-town tourist providers choose to spend more time in Idrija Geopark.

The story of Idrija began with the creation of our planet and continues with the processes that modify and keep it alive. We wish to show that processes in and on Earth define the environment, the variety of rocks, the morphological diversity that makes plants, animals, and people adapt their ways of life.

During the project, work group members and external collaborators developed a rich exhibition with models, interesting items, animations, and video presentations to stimulate both those with little interest in the environment and those seeking deeper knowledge. Three sites in the exhibition, are dedicated to the youngest visitors who will discover natural laws and facts in a playful and interactive way. With digital technology (a short promo video linked to a QR code), the exhibition also presents and promotes visits to the partner UGGPs.

The exhibition, which opened on the 24 October 2019, can be visited individually or with a guide. The Idrija Geopark finally has a Visitors Centre – an excellent starting point for your trip through the Geopark as it offers basic information on the heritage as well as classic tourist information.

The project was co-financed by European Funds (ERDF, IPA).



**The first official guided tour through the Visitor Centre with Marjutka Hafner, Secretary General of Slovenian National Commission for UNESCO and Mirka Trajanova, NC IGGP Slovenia Chairperson.**  
 (Photo by Bojan Tavčar).

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## Lanzarote and Chinijo Islands UNESCO Global Geopark, Spain



# Art and Geology in Lanzarote and Chinijo Islands Geopark

In the 1960's, the renowned artist from Lanzarote César Manrique created the Art, Culture and Tourism Centres in what is now the Lanzarote and Chinijo Islands UNESCO Global Geopark. By transforming these sites into works of art, the artist succeeded in highlighting the value of the natural and geological features of the island, thus preserving its natural, cultural, geological and landscape heritage.

The Centres are linked to the heritage, and therefore to the culture of the island. With the Centres, the Geopark meets not only the conservation objectives of those centres, but also raises awareness among the local people and visitors. In order to achieve this, the Centres have a wide-ranging programme of events which contribute to promoting the culture and are of special benefit to local artists. In geological terms, most of these events are held in the most highly acclaimed architectural jewels. The auditoriums in Jameos del Agua and in Cueva de los Verdes, are located in two of the most significant geo-sites within the Geopark.

The Jameos del Agua Auditorium is situated on the inside of a volcanic tube, with a domed structure and completely natural walls, created by the eruptions of Volcán de la Corona more than 25,000 years ago. The Auditorium in Cueva de los Verdes on the other hand, is situated

**A concert of classical music in the Auditorium of the Cueva de los Verdes.**



**Poster for a performance in the Jameos del Agua Auditorium.**

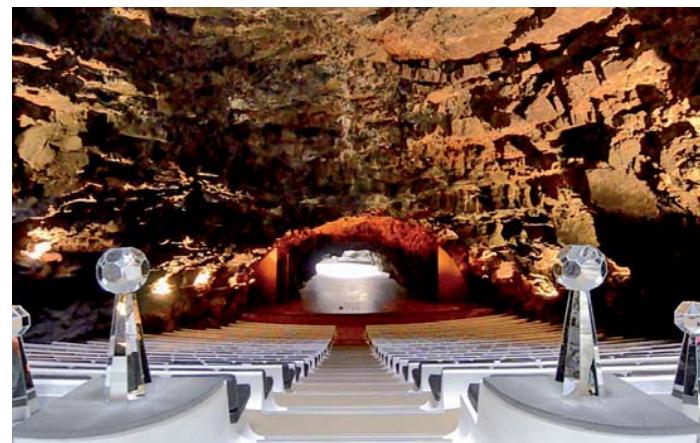
in a cave that is part of the same volcanic tube. These locations make them unique in the world. Their perfect acoustics are a delight, not only for the audience but also for artists who are touched by having the chance to perform and show their art in such a magical venues. Since these are natural features, their beauty is outstanding, and they leave all visitors in awe. The auditoriums hold 600 and 400 people respectively, and in 2018 more than 9,000 people participated in the events.

Important national and international artists have performed on their stages (Bárbara Henricks; Roger Hodgson; the Tenerife Symphonic Orchestra). Events at the Centres have also included film and visual arts festivals, a dance festival (Israel Galván, and others) and performances produced by and with local artists such as Tempo and Ángaro, among others.

At the Lanzarote and Chinijo Island UNESCO Global Geopark, we continue the work of those who were the first to recognize the value of our geological heritage by making it known to everyone through culture and art. The result is simply extremely exciting.

**Isabel Betancort Delgado**  
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**The Jameos del Agua Auditorium.**



# Naturtejo UNESCO Global Geopark, Portugal

## Proença-a-Velha Village celebrates 800 years

### by Promoting Research and Hosting Cultural Events in Naturtejo Geopark



**Closing concert with the choir Tomás Luis de Victoria, from the University of Salamanca, celebrating 800 years of the Proença-a-Velha Village.**

In April 1218, D. Pedro Alvites, Master of the Knights Templar in Portugal, granted the first Foral document to Proença-a-Velha with the agreement of the king D. Afonso II and queen D. Urraca. This ancient town is nowadays a small village in the municipality of Idanha-a-Nova, with 140 inhabitants, within the Naturtejo UNESCO Global Geopark.

The community decided to celebrate this unique date. The commemorations lasted one year, from April 22<sup>nd</sup> 2018 to April 28<sup>th</sup> 2019, and were only possible due to the joint efforts of the whole community and the cooperation of the institutions from Proença-a-Velha, namely the Parish administration, the Church Holy House of Mercy and the PROENÇAL – League for the Development of Proença-a-Velha, with the important support of the Municipality of Idanha-a-Nova.

During the last twelve months, eight research meetings, open to the public, were held in Proença-a-Velha. These included 27 speakers with 23 talks dealing with a variety of subjects related to the territory of Proença-a-Velha, ranging from geodiversity and past mining, archaeology, history, biodiversity and landscape, arts & crafts, religion, to art, architecture, traditions and ethnography. The community participated significantly in these talks.

**Opening of the photo exhibition of Marcin Górski, in the Gallery of the Olive Oil Press at Proença-a-Velha.**



presented by professors and experts from the Portuguese Academy of History, Association for the Studies of High Tagus, Municipality of Idanha-a-Nova, Directorate of Cultural Heritage, UNESCO Naturtejo Global Geopark, Polytechnical Institute of Castelo Branco, Ancient Art National Museum, the universities of Coimbra, Évora, and Lisbon's ULisboa, Católica and NOVA.

Eight concerts were hosted with the participation of ten groups presenting different styles of music, with special emphasis on choral groups. Four exhibitions about Proença-a-Velha were organized, two involved landscape painting and urban sketches and two were concerned with photography. A new hall of religious art was opened in the old building of the Mercy Hospital, to exhibit the Calvary of Proença, one of the oldest (13<sup>th</sup> century) and most interesting wood sculptures known in Portugal.

Coinciding with the commemorations of the centenary of the armistice of World War I, a monument to the soldiers from Proença during this war, who all returned alive, was inaugurated by the mayor of Idanha-a-Nova, Armindo Jacinto, at the Square of the Cross (Largo do Cruzeiro).

A project for tourism signage, including the placement of bilingual interpretative panels next to the main sites of interest in the village, was initiated. At the highest point in the village, next to the Chapel of the Lord of the Calvary, an interpretative panel presenting wide views of the landscape will be installed with the support of the Geopark. The research developed by experts during the last year is the starting point for the Archaeological Map of Proença-a-Velha, identifying over 70 sites where only two were previously recorded. Later this year a book will be published with the results of the different research projects providing an up-to-date synthesis about all existing knowledge of the ancient Proença-a-Velha and as a reference for building the future of this community.

**João Adolfo Geraldes**  
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**Field work, engaging in archaeological mapping with the local people.**

# Odsherred Geopark opens its third Information Point within one year



An interpretation of a painting in the exhibition.



**Audience participation in which the viewer interprets and illustrates the story provided in the audio guided tour.**

**The introduction to the chronology of the history of art in Odsherred.**

On 10 October 2019, Odsherred Geopark opened its third information point in the local art museum with arts and art history as the obvious theme.

The recommendation in the evaluation report approving Odsherred Geopark's membership of the Global Geoparks Network in 2014, stated that the Geopark should establish or develop plans for a Geopark visitor centre. As a result, the Odsherred Geopark decided to create four information points, one for each theme within the

Geopark. The fourth remaining information point with the theme 'local produce' will hopefully be situated in the Michelin awarded hotel restaurant at Dragsholm Castle.

At the art museum in Odsherred, the Geopark and the museum are now able to introduce visitors to the Geopark's unique territory, to its place in the history of art and especially to the relationship between art and the landscape.

The information point provides a chronological tour of the different artists in the area and their main works, together with an audio guided tour of the local folklore consisting of a story about trolls shaping the landscape.

As something new in the specially designed information points, all decorated in white and green, young visitors can now also produce their own art in the third information point by drawing their interpretation of the audio guided story.

This very welcome addition provides... "Odsherred Geopark" ... with a splendid opportunity to highlight the proud art traditions of Odsherred for the visitor, thereby promoting the holistic connections between man, nature and geology.

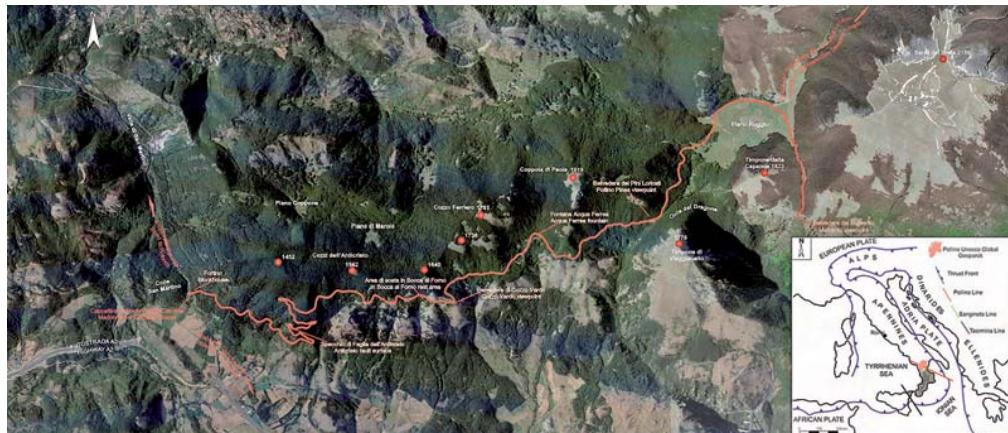


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# Pollino UNESCO Global Geopark, Italy

## “On the trail of the Pollino line”, a geo-route through the Pollino Geopark

Location on Google Earth of the geo-route through the Pollino Global Geopark, named “On the Trail of the Pollino Line”. The inset map illustrates position of the Pollino Geopark and “Pollino Line” within the geodynamic framework of the Mediterranean.



The geological and geomorphological information panel at the Cozzo Vardo viewpoint.



The Pollino UNESCO Global Geopark is a large area on the Calabria-Lucania border, Southern Italy, in which significant geological and geomorphological features are associated with several natural and cultural resources.

One of the strategic actions undertaken by the Pollino Geopark's staff has been to establish comprehensive information panels at significant sites with explanations about structural geology and the related geomorphology. The geological interpretation and tectonic history of the whole area, involving the length, kinematics and seismotectonics of the regional fault system known as the “POLLINO LINE”, is provided at some geologically significant viewpoints distributed along a kilometre scale route.

In this way the Geopark has established the geo-route “ON THE TRAIL OF THE POLLINO LINE”, where tourists, by using the information panels, can appreciate the geological, geomorphological, and tectonic processes that define the present-day features in the landscape. The route includes the unique “COZZO FERRIERO'S PRIMEVAL BEECH FOREST UNESCO WORLD HERITAGE SITE” and the “POLLINO PINES VIEWPOINT”.

The Pollino UNESCO Global Geopark is situated in the southern Apennines in one of the main younger circum-Mediterranean orogenic belts. It is formed from tectonic units originating from the deformation of different palaeogeographic elements within the Mesozoic Tethys Ocean and the Eurasian and African plate margins. The geology is dominated by the Mesozoic carbonate platform, the backbone of the Pollino Geopark, and by ophiolite-bearing units,

located in the western part of the Geopark (Timpa delle Murge and Timpa Pietrasasso Geosites). Significant structural deformation features include the tectonic superimposition of oceanic crust derived rocks on the sedimentary carbonate rocks which form the Apennine Mountains and by movement along the Neogene-Quaternary strike-slip regional fault, the “POLLINO LINE”, resulting in the displacement of the Calabrian Crystalline Block towards the south-east relative to the Southern Apennines.

The geological history of the Pollino Geopark is the product of the long-term evolution of different and contiguous palaeogeographic domains, as shown by the variety of rocks, structures and morphotectonic features. Along the route of the “POLLINO LINE” it is possible to observe the relationships between the components of the mountain chain and, from the viewpoints, the main faults and their influence on the evolution of the landscape. Because the area is seismically active, the geo-route is also linked with explaining the nature of faults and the role of tectonic processes in activating faults and creating earthquakes. Thus the “On the Trail of the Pollino Line” geo-route provides an educational itinerary for schools and the general public, to understand the causes of earthquakes and the risk involved by living in a seismically active zone.

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## Swabian Alb UNESCO Global Geopark, Germany

# Experience Earth history in the Geopoints Project in the Swabian Alb Geopark



**Geopoint  
Neidlingen  
Waterfall: QR  
codes on the  
Geopoint panel  
provide access  
to in-depth  
information  
about the  
geotope.**



The UNESCO Global Geopark Swabian Alb is geologically very diverse and includes geotopes and geomorphological phenomena ranging in age from the Jurassic to the present day. They shape the face of the landscape. However, geotopes and geological phenomena are not always immediately recognizable to the visitor; they require interpretation and explanation. As a result, geotopes are not only perceived as visually interesting, they also become sites with an eye-opening experience.

In order to better emphasize the special geological features of the Geopark for visitors, the project "Geopoints" was launched in 2016. Geopoints are outstanding geotopes, involving elements in the cultural landscape and smaller museums in the Geopark, where or in which Earth history can be experienced.

The basis for the selection of Geopoints is the geotope inventory, which has been available in the Geopark since 2016. Criteria for the selection of geopoints include their value in representing a specific geological epoch, their spatial distribu-



tion in the Geopark, their significance, attractiveness and accessibility. Vulnerable geotopes that cannot withstand a high number of visitors, are protected and not designated as Geopoints.

To-date, 27 geo-historically important sites in the Geopark have been designated as Geopoints. Ultimately the goal is to identify around 10 to 30 Geopoints in each of the 10 counties in the Geopark. There is a superb proposal for choosing geopoints, with the participation of the local population, for example using online voting to identify the 100 most beautiful geotopes in the Swabian Alb Geopark. This proposal aims to inform the local people about the Geopark and the geotopes that reveal the significance of its geological heritage.

Geopoints are recognizable by graphically uniform panels with the caption 'Geopoint'. The uniform design ensures easy recognition, that the information is conveyed in an exciting way and informs the viewer that the site is a geological highlight in the Geopark.

The information transfer takes place via short and easy-to-understand texts in German and English. A QR code takes the visitor to the Geopark's website, where additional information about the site can be accessed. Larger information panels with more information are provided for more complex geotopes.

Geopoints provide an opportunity to promote outstanding geological phenomena in a special way. In this respect the Geopark is supported by its information centres which advertise the Geopoints on their websites and in brochures.

Geopoints also provide excellent opportunities for promoting and marketing the Geopark. The attendance of local politicians and the press during the inauguration of new Geopoints contributes significantly to raising the Geopark's visibility and its acceptance by the local population.

**Geopoint  
Gutenberg  
highlights  
calcareous  
sinter terraces  
in the bed of the  
Weisse Lauter  
River.**

**Geopoint  
Veringenstadt:  
Ceremonial  
inauguration of  
the Geopoint  
"Beanore Pit"  
in the county of  
Sigmaringen.**



**Siegfried Roth**, roth@geopark-alb.de  
**Iris Bohnacker**, bohnacker@geopark-alb.de

# Vikos- Aoos UNESCO Global Geopark, Greece

## Edutainment in the UNESCO Vikos-Aoos Geopark!



**Participants sign up for the 'Treasure Hunt' in the Vikos-Aoos UNESCO Global Geopark.**



**Participants trying to resolve the puzzle along the 'Treasure Hunt' route.**

**H**aving taken into consideration the visitors' wishes for a more informative tour of the Geopark's hidden secrets, Epirus SA, the Geopark's Management body, undertook the implementation of the THEMA project, funded by the Interreg Greece-Albania 2014-2020 Programme. THEMA's core idea is the development of a specialized mobile application that relates to the development of three thematic interpretive routes centered on Vikos-Aoos UNESCO Global Geopark. Visitors will soon be able to follow, position themselves and locate selected sites of special interest along the three routes, with the help of the application. The application incorporates gamification, edutainment strategies together with information about local tourism providers.

Each of the three routes in Vikos-Aoos Geopark fits perfectly with its «sister» thematic route within the neighbouring country Albania. This is not accidental, since the cross-border city of Gjirokaster in Albania and Vikos-Aoos Geopark in Greece, are recognized by UNESCO as a World Heritage Site and a UNESCO Global Geopark respectively.

The three routes, together with their specialized themes are as follows:

Route 1: «Vikos-Aoos Geopark: A route to ex-

plore Nature, Culture and Geology»

Route 2: «Local flavours: local products and Epirotic gastronomy». The route introduces participants to the traditional Greek cuisine of the Epirus region.

Route 3: «Nature and Wellness»

On Sunday September 29<sup>th</sup> 2019, Epirus SA and the Association of Hoteliers of Ioannina, organized for the first time a 'Treasure Hunt' in the Vikos-Aoos UNESCO Global Geopark in the framework of the THEMA project together with the Joint Secretariat of the Programme. The event was linked with the publicity involving the 'European Cooperation Day 2019' on 21 September 2019.

As envisaged, the game involved the participation of teams from either Ioannina or the areas of Konitsa and Zagori, who, after being provided with the necessary map and instructions, would explore various parts of the Geopark. The teams were guided by puzzles the resolution of which would lead them to the desired victory and the acquisition of the treasure.

Finally, forty people of all ages started from the village of Kipi in Zagori and rushed into the Geopark, searching for the hidden boxes with the coded instructions at selected points of interest along the route. Deciphering the riddles, all the secrets of the Geopark were gradually revealed and the contestants, after crossing old bridges and paths, forests, rivers and mountains and stone-built villages ended up at the Wine and Vine Museum in Konitsa where a small celebration took place!

Such was the success of the Treasure Hunt Game that we decided to organize it every year from now on!!! You are welcome to participate!!!



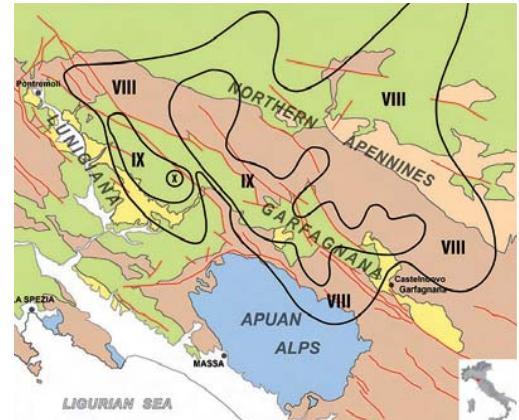
**The winning team of the 'Treasure Hunt' in the Vikos-Aoos UNESCO Global Geopark celebrate their victory in the Wine and Vine Museum in Konitsa.**

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# The Centenary of the 1920 Garfagnana-Lunigiana Earthquake

provides the Apuan Alps Geopark with an opportunity to learn from the past to build a safer future

Historical image of the rescue operations after the 1920 Garfagnana-Lunigiana Earthquake.



On 7<sup>th</sup> September 1920 a strong earthquake struck an area of over 1,000 square kilometres in the Garfagnana and Lunigiana regions, which partially overlap with the northern area of the Apuan Alps UGGp. The effect was destructive causing more than 170 deaths and the collapse of many buildings. The rescue operations were managed mainly at a local level with scarce resources and few tents to accommodate the refugees.

The epicentre was located west of Piazza al Serchio Village and the earthquake had an intensity of IX/X degrees MCS (Mercalli-Cancani-Sieberg Scale). Based on the historical reports of the damage, the earthquake, generated by tectonic movement in the Garfagnana-Lunigiana seismogenic zone, had a magnitude of 6.5 on the Richter Scale. The Garfagnana area on the north-eastern border of the Apuan Alps UGGp, corresponds to a tectonic depression bounded by NW-SE oriented fault systems that define the geographical separation between the Apuan Alps and the main ridge of the Northern Apennines. The NW-SE fault systems are the product of high-angle brittle faulting which accompanied the uplift of the Apuan Alps in the Pliocene Epoch during the final stages of their geological evolution.

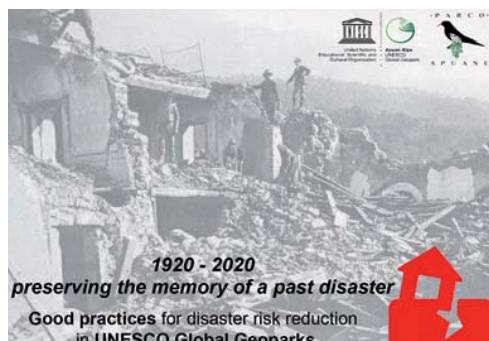
Therefore, major earthquakes in the Apuan Alps area are not an exception as several events have been recorded before and after 1920, confirming that the Garfagnana-Lunigiana sector is one of the most hazardous seismic zones in the Northern Apennines. The most recent high-magnitude earthquake (magnitude 5.3) occurred in 2013. During this event the severe damage to buildings, that are a significant component of the monumental heritage, included new fractures and the opening of old wounds from previous earthquakes. Fortunately the buildings were constructed and restored using earthquake-proof solutions according to codes and regulations to build safer buildings established by Regional and National authorities since the early 1980s with the involvement of geologists, seismologists and other Earth scientists.

Considering the crucial need to learn from the past to build a safer future, the Apuan Alps UGGp has already established as a top priority the implementation of projects and activities to raise awareness and mitigate risks from natural disasters by empowering its local communities.

The centenary anniversary of the 1920 earthquake provides an occasion to promote a series of initiatives such as workshops, exhibitions, lectures and educational activities involving local people, students, visitors, stakeholders and politicians.

The Apuan Alps UGGp will be supported by the National Institute of Geophysics and Volcanology of Pisa, whose mission includes the monitoring and understanding of the earthquakes for the assessment of seismic hazards and the mitigation of the seismic risk.

Isoseismal map of the 7<sup>th</sup> September 1920 earthquake showing the geological-structural background of the Apuan Alps and surrounding areas.



The Project  
“1920-2020:  
preserving the  
memory of a  
past disaster”.

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# Impressive new finds of giant fossil tree trunks at the the Acrochiras Wind Farm in Lesvos Island Geopark

**Giant fossil tree trunks came to light during the rescue excavations in the Acrochiras Wind Farm area under the supervision of Prof. Nickolas Zouros director of Natural History Museum of the Lesvos Petrified Forest.**



**G**iant fossilized tree trunks have recently come to light during the ongoing rescue excavations carried out by the Natural History Museum of the Lesvos Petrified Forest at the Acrochiras Antissa site. The rescue excavations are part of a project for replacing wind turbines at the Wind Park of Acrochiras by the National Electricity Company - Renewable Energy Section.

The excavations revealed hundreds of fossilized trees, among them the largest fossilized tree ever discovered in the Lesvos Petrified Forest, in the foundations of the wind turbines. The majority of the trees which are horizontal and not in growth position, were buried by major mud flows.

Work on the site began in September 2018 and continued intensively until September 2019. During that period more than 500 fossil trees were unearthed. The majority of the fossils, after conservation treatment, were moved to the Natural History Museum to facilitate the continued

**Examples of conserved giant fossil tree trunks recovered during rescue excavations at the Acrochiras Wind Farm.**

construction of the wind farm. The most prominent fossils were preserved in situ.

The impressive gigantic fossil trunks of conifer trees which are almost 25 metres in length are related to the modern redwood coniferous trees in the subfamily Sequoioideae of the family Cupressaceae. Fossils of pines, oaks, cinnamon and laurels were also recovered. Following the completion of their conservation treatment, the fossil trees will be the main exhibits in the new open-air park which will be created on Akrochiras Hill in the Petrified Forest of Lesvos.

The excellent cooperation between the Natural History Museum and the National Electricity Company has to-date made it possible to combine the development of renewable energy with the preservation and enhancement of the geological heritage of Lesvos Island UNESCO Global Geopark.

The excavations in the area of Acrochira provide important information about the flora during the development of the Lesvos Petrified Forest and complement the reconstructed image of the forest that existed in the western area of Lesvos during the Miocene Epoch, 20 million years ago. Research in the area, by the Natural History Museum, has identified more than 50 species of fossil plants in the remains of the Lesvos Petrified Forest.

Protection, conservation and preservation of the Lesvos Petrified Forest is undoubtedly a duty and an obligation in creating a legacy for the generations to come. However, it can also be a promising source of inspiration and a tool for sustainable development in the Lesvos Island UNESCO Global Geopark.

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Nickolas Zouros [nzour@aegean.gr](mailto:nzour@aegean.gr)

**Following their conservation treatment, the majority of the fossil tree trunks were transported to the Museum to facilitate the construction of the wind farm. The most prominent fossils were preserved in situ.**

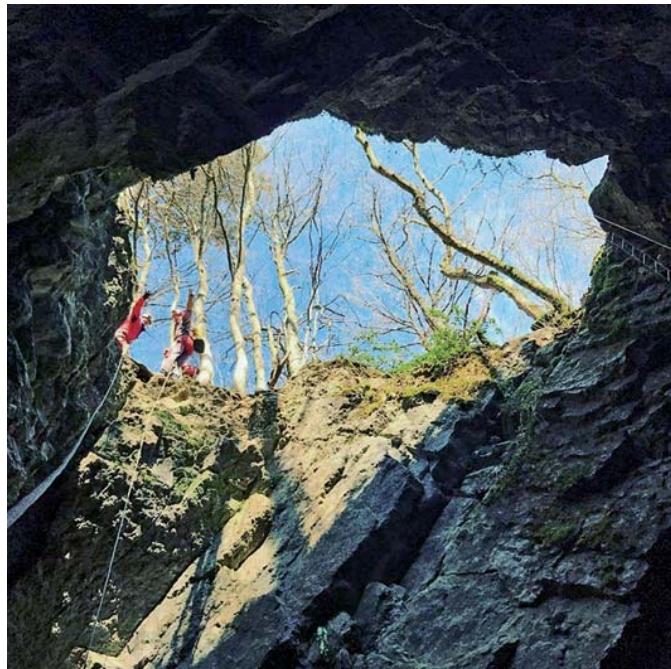


# Famenne-Ardenne UNESCO Global Geopark, Belgium

## The «Fond des Vaulx»: folklore, geology and education



**The Trottis aux Fosses sink hole,  
a Subterranean Cavity of  
Scientific Interest.**



The «Fond des Vaulx» is a major geosite in the Famenne-Ardenne UNESCO Global Geopark. The small, deep valley called the Fond des Vaulx with its wild, untamed nature and a surface area of approximately 15 hectares (37 acres) provides us with a landscape which contrasts strongly with the wide plain surrounding Marche-en-Famenne. The valley, which is part of the limestone outcrop known as the Calestienne, was fashioned over millions of years by the acidic water seeping from the Ardennes Massif in the south. Three walks enable you to discover, among other sights, several cavities and caverns (the Ducasse Cave, 'The Fox's Hole', and others), chantoirs (fissures in the river bed), rock faces, e.g. the 'The Flat Stone' and a chasm called the Trottis aux Fosses. The latter is a geological feature unique in Belgium which is list-

ed as a Subterranean Cavity of Scientific Interest. The chasm, an iconic geosite, is a sinkhole in which a large, 10 metres deep entrance pit, leads into a chamber with a downward-sloping floor littered with huge boulders of rock that have fallen from the roof of the cave. The chamber continues to a depth of up to 28 metres.

Many legends are linked with the Fond des Vaulx, a valley shrouded in mystery and the Trottis chasm. They include among others, the legend of the "Grosse Biesse" or Great Beast of the Fond des Vaulx Valley. The beast, with the size of two elephants, has a long, pointed tail, the head of a crocodile, scales the size of dinner-plates, a long neck and huge teeth. Every year, this fire-breathing dragon emerges from its secret lair, in the well-known geological site within the Geopark, to descend on the good folk of Marche. Great fun for young and old, all with but one idea in mind: to celebrate the historical heritage and folklore of their community.

The Fond des Vaulx is also a geosite of choice for our conferences and educational activities with the city's schools. It allows students to discover the fauna, flora and the nature of the soil around them. We want students, but also the local people to reclaim this beautiful geosite.

It should be noted that the geosite is included in «Life Hélianthème» a project aimed at restoring limestone pastures, which are one of the richest ecosystems in Wallonia. Thus in diversifying its natural heritage, the Fond des Vaulx, the green lung of Marche, will recover its former significance and maintains its place in the landscape.

**The Great Beast  
of the Fond des  
Vaulx Valley  
descends on  
the good folk of  
Marche.**



**A student excursion in the Fond des Vaulx.**

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# Rediscovery of the fossil footprints of Saignon: a voluntary community project in Luberon Geopark



Volunteers removing sand to excavate the surface with the bird fossil footprints during the October 2019 dig.

(© David Tatin)

A group of volunteers brushing off surface dust on the fossil footprints during the October 2019 dig.

(© David Tatin)

## The slab of Saignon: on the tracks of ancient animals

This outstanding site is located in the centre of the Luberon UNESCO Global Geopark. There, 33 million years ago, animals walked the muddy shores of a large lake. They left footprints, which were rapidly filled with sediments and preserved for millions of years.

Fossil footprints provide a glimpse into the everyday activities of extinct animals, recording a fleeting instance millions of years ago.

The limestone slab of Saignon is covered with hundreds of small depressions of different sizes and shapes over an area of 600 square metres. The fossil footprints comprise isolated prints and trackways of different sizes and characteristics. There are several types of tracks: two-toed, three-toed, five-toed prints attributed to birds, rhino-like mammals and other hoofed animals.

The study of the prints provides information about the track-makers and about what the animals were doing as they made the tracks.

## A unique and protected site

Mammal fossil footprints are relatively rare with about a hundred sites known worldwide. The Luberon area includes several footprint sites. The significance of the Saignon site lies in the diversity, the high-density and in the quality of the tracks' preservation.

In 2001, after a series of studies on the conservation management strategy, the site was covered by a geotextile, sand and rubble in order to protect it.

## Towards a new project with the participation of people!

In June and October 2019, a voluntary community project was organized to excavate the site. To carry out this work, we called for the voluntary contribution of the local population through schools and associations.

More than 80 local volunteers and 5 primary school classes joined in the fieldwork. The participants discovered basic palaeontological techniques and learnt about the Luberon's past



Portion of the slab of Saignon yielding ungulate fossil tracks.

(© Stéphane Legal)

climate and ancient mammal communities. Looking backward through time at how much the planet has changed in the past is a key to understanding the changes happening in today's world.

Now the protective cover has been completely removed, the state of conservation of the slab will be assessed. The conservation strategy will involve a scientific re-investigation, full documentation and 3D digital data capture of the site using photogrammetry, restoration, and the implementation of new in-situ conservation measures compatible with public access such as an on-site museum building.

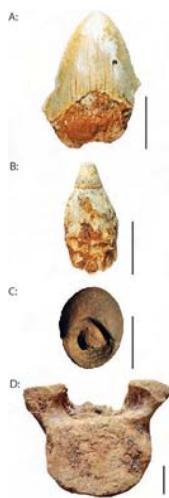
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# The Megalodon Excavation Project



The team consisting of TERRA.vita and Museum am Schölerberg staff members as well as amateur palaeontologists look for fossils at the excavation site.

(© Tobias Fischer)



A part of the fossil assemblage in the Grafeld Sand Pit:

- A) tooth of *Carcharocles megalodon*,
- B) a whale tooth,
- C) magnolia fructification,
- D) a whale vertebra; scale bar = 3 cm.

(© Carina Könnig, Angelika Leipner, Tobias Fischer)

"Palaeontological gold": one of many in-situ discoveries of a Megalodon shark tooth.

(© Tobias Fischer)

Recent palaeontological excavations undertaken by the Nature and UNESCO Global Geopark TERRA.vita Geopark, in collaboration with the Natural History Museum "Museum am Schölerberg" in Osnabrück, revealed a previously unknown Miocene marine vertebrate assemblage in the Geopark's area. The assemblage also includes up to 10 cm long teeth of the well-known Megalodon (*Carcharocles megalodon*), the largest known toothed shark in Earth's history, which represent the first fossil remains of this animal to be discovered in NW Germany.

The excavations were motivated by chance discoveries of a Miocene shark tooth assemblage while preparing for a field excursion in the Geopark. However, the first discoveries of these fossils were made by the amateur palaeontologist Carina Könnig, who also found specimens of Megalodon teeth. Her outstanding collection was professionally curated, but in the absence of scientific documentation doubts were raised about the scientific value of her discoveries.

The excavations were conducted in March and June 2019 in the Grafeld Sand Pit located in the Ankum Highs, a chain of hills in the northern part of the Geopark. The geological succession in the sand pit consists of two units: a glauconitic fine-grained green sand indicating shallow marine conditions, and an overlying layer of fossil-rich cross-bedded loosely consolidated conglomerate grading to sand, which indicates a regression of the sea and an estuarine or a coastal depositional environment. The fos-

sils, which were discovered in the latter unit, consist of the teeth and vertebrae of eight different shark species including *Carcharocles megalodon*, *Carcharomodus escheri*, *Cosmopolitodus hastalis*, *Isurus oxyrinchus* and *Parotodus benedeni* and suggest an age of approximately 12 million years. Teeth, vertebrae, ribs and tympanic bullae of whales and probably other marine mammals, fossilized clams, snails, crab pincers and sponges as well as lignite and magnolia fructifications of terrestrial origin complete the fossil content.

The transition from the glauconitic sand to the conglomeratic sand indicates a regressive shift of the primordial North Sea in the region during the Miocene. The Miocene marine sediments were exposed during the Saale Glacial event approximately 190 thousand years ago, when they were pushed and included as lenses of several metres in length, in the glacial deposits of a terminal moraine.

In presenting this project, we would like to encourage Geoparks to act as a communication tool between academic institutions, museums, amateur geologists and amateur palaeontological working groups. TERRA.vita has already gained some positive experience in this respect working together with the amateur palaeontologist Horst Felker. This collaboration has resulted in scientific excavations and publications about Eocene shark fossils. Furthermore, it has allowed the establishment of the HaiTec education centre at Kuhlhoff in Bippen. These examples show that Geoparks and geoscientists can achieve valuable scientific results in collaboration with amateur palaeontologists and at the same time, receive more attention from the media and tourists. Amateur palaeontologists can benefit from complying with legal requirements for collecting fossils and, by mastering techniques for documenting their discoveries more professionally, they can achieve recognition of their work from professional scientists,

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## Villuercas-Ibores-Jara UNESCO Global Geopark, Spain

# The origin of life as we know it: the international meeting on the Ediacaran System and the Ediacaran–Cambrian transition in Villuercas- Ibores-Jara Geopark



**Delegates attending the International Meeting on the Ediacaran System and the Ediacaran – Cambrian Transition in Villuercas-Ibores-Jara UNESCO Global Geopark.**



**Field trip to an outcrop with sabelliditid fossils.**

The International Meeting on the Ediacaran System and the Ediacaran–Cambrian Transition held in the Villuercas-Ibores-Jara UNESCO Global Geopark, Spain, from 17 – 24 October, 2019, was organized by the Geopark, together with the University of Extremadura, the IGEO (Institute of Geosciences), and the International Commission on Stratigraphy.

The event was attended by 105 participants, researchers from universities and research centres from 18 countries. In the 84 oral communications and poster presentations, the newest advances on sedimentology, palaeontology, geochemistry and palaeomagnetism of this almost unknown period and its boundaries were presented. The field excursions provided opportunities for visiting outcrops of the Ediacaran and Ediacaran–Cambrian transition in the Central-Iberian Zone and also to get to know the cultural and natural heritage of the area.

The Geopark was chosen for this meeting due to the exceptional nature of the outcrops of the Ediacaran Period, including the Ediacaran–Cambrian Transition, and the importance of fossil

deposits of those ages. These include venditae-nids and sabelliditids, interpreted as multicellular algae and annelids, to claudinids, the first biomineralized metazoans and treptichnids, the first complex trace fossils. All these fossils reveal some of the most crucial events in the evolution of life: the transition from single cell organisms to multicellular organisms, the acquisition of skeletons, and the so-called “Agronomic Revolution” (when the animals started burrowing in the seafloor).

In the words of some of the participants:

Dr. Shuhai Xiao, Professor of the Department of Geological Sciences, Virginia Polytechnical Institute and University, USA, and Chair of the Subcommission on Ediacaran Stratigraphy: “*It has been the best meeting I have attended taking into account the mixture of a large number of important scientists and the good mix of established specialists and young people, the geology visited during the field trips, the cuisine, culture and place of the meeting and its surroundings*”.

Dr. Bruce Runnegar, Professor Emeritus of the Department of Earth, Planetary, and Space Sciences in UCLA, USA, and Director of the NASA Astrobiology Institute from 2002-2006 said: “*Is a fantastic meeting. An outstanding geology and palaeontology in a very special place. The work of Geoparks making the history of our planet known is very important. I'm enjoying Villuercas-Ibores-Jara not only as a scientist*”.

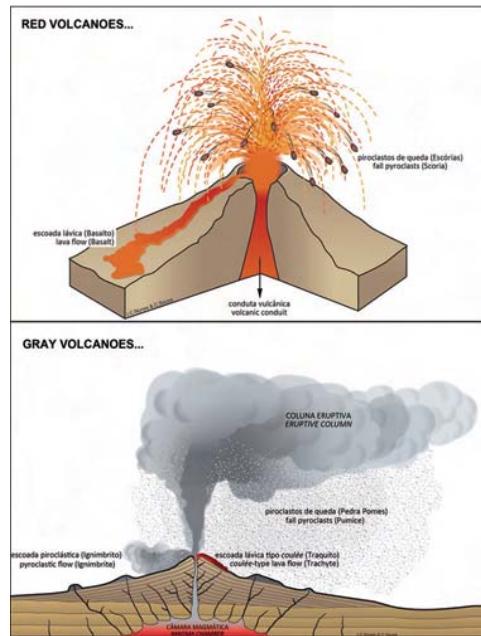
Dr Małgorzata Moczydłowska, Professor Emeritus of the Department of Earth Sciences, Uppsala University, Sweden: “*Most of us know the relevant geology and palaeontology of this area through the scientific papers, but the Geopark is also doing a fantastic work regarding natural and cultural heritage. I was here for fieldwork 20 years ago and the change is very remarkable. I am enjoying a lot with this more complete vision of this area*”.

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# “LITOTECA”: more than a collection of rocks!

The Azores  
UGGp  
“LITOTECA” –  
rock collection.



Red & Gray  
Volcanoes:  
a simplified  
approach to  
learn about  
volcanic  
eruptions and  
volcanic rocks.

The Azores UNESCO Global Geopark (UGGp) recently promoted the production of a collection of rock samples that represent the geodiversity of its territory and geological history. The main purpose of the rock collection named “LITOTECA”, meaning the deposit/archive of rock samples, is to support the dissemination of information in educational and scientific programmes and to promote geoscience initiatives undertaken by the Azores UGGp.

The “LITOTECA” therefore contains a collection of identified, plainly labelled geological samples that is easily transported and suitable for use by the Geopark’s staff and stakeholders in educational activities, engaging with the general public and in exhibitions.

The “LITOTECA” includes 12 samples that illustrate the lithological geodiversity of the Azores

Islands, including ankaramite, surtseyan tuff, ignimbrite, trachyte, basalt, scoria, pumice, volcanic sand, syenite and fossiliferous limestone. It also includes the Work Sheet “Volcanoes...in colours”, designed especially to be used by teachers, students and the Geopark staff during activities involving education and the promotion of geoscience. This document which is also available on the Azores UGGp website (in Portuguese and English), includes a novel and simplified approach to learn about volcanoes, volcanic eruptions and volcanic rocks, with a direct connection to geological samples included in the “LITOTECA”:

#### “VOLCANOES ...in colours!”

YES, “red volcanoes” and “gray volcanoes”: have you heard about them?

“RED VOLCANOES” are associated with basic magmas, and their eruptions are characterized by: 1) the emission of fluid lava flows and, 2) the ejection of lava fragments (pyroclasts) thrown out into the air. The lava flows form rocks like the **BASALT**, and the pyroclasts contribute to deposits of ash, lapilli and bombs, commonly designated as **SCORIA**!

“GRAY VOLCANOES” are associated with siliceous magmas, usually with very explosive eruptions characterized by: 1) high eruptive columns; 2) a “rainfall” of pyroclasts reaching great distances; 3) the occurrence of pyroclastic flows that move along the flanks of the volcano and, 4) sometimes, the emission of very viscous lava flows, as domes or coulées. The pyroclasts contribute to deposits of ash, lapilli and blocks, commonly designated as **PUMICE**, the pyroclastic flows produce **IGNIMBRITES** (or tuffs) and the lava flows form rocks like **TRACHYTE**!

Have you identified those rocks in the “LITOTECA”? ...did you understand the differences between them? ...can you “see” the type of volcano/magma association? ...Well Done!

João Carlos Nunes jcnunes@azoresgeopark.com



Promotion of  
the Azores UGGp  
“LITOTECA”  
at the 15<sup>th</sup>  
European  
Geoparks  
Conference,  
Seville,  
September  
2019.

# North Pennines AONB and UNESCO Global Geopark, UK Geology Projects Traineeship



**Building a geological map of the North Pennines AONB Geopark from pebbles.**

In the summer of 2018 I joined the North Pennines team as a Geology Projects Trainee. The aim of this traineeship was to experience working in geoheritage interpretation and education in the North Pennines Area of Outstanding Natural Beauty and UNESCO Global Geopark, and it has been quite a year. Mine was the first of three year-long graduate internships as part of the North Pennines “Earthworks” project. I joined close to the beginning of the project and have worked with schoolchildren, volunteers, businesses, scientists, artists, writers, designers and families on a range of events and interpretation.

Together with training from the Geopark’s experienced staff, I had the opportunity to take a lead on several aspects of the project. These included developing activities for events, designing interpretation boards and managing communications with a group of new ‘geo-guide’ volunteers. Another of my tasks was to create a series of five new self-guided geological trail leaflets, encouraging visitors to explore some of our special geological features and mining relics. This was a great chance to engage with local experts, particularly those in our Geopark Advisory Group, and to learn a lot about the challenges of maintaining scientific integrity when producing materials for the public.

Contributing to our 2019 EGN Week events programme was a particular highlight. Over the week we delivered a number of events for families at our Bowlees Visitor Centre, including the creation of a geological map of the Geopark using pebbles. Members of the public were invited

to come along and place rocks into a piece of artwork that will be visible for years to come. We also led a guided walk and produced a temporary trail for families to follow.

Another highlight has been engaging with staff from other Geoparks and aspiring Geoparks when I attended the UK UNESCO Global Geoparks Forum annual meeting in the North West Highlands in May 2019.

A geology degree is a ticket to many exciting careers, but when I graduated from university I didn’t really know where I wanted that ticket to take me. For a geoscience graduate with a love of Earth history, neither academia nor industry seemed to offer much of an opportunity to really share that passion with others. My time in the North Pennines has provided me with an excellent range of transferable skills, which I hope will lead to further employment in geoheritage in the future.

The traineeship, along with the “Earthworks” project, is funded by the UK’s National Lottery Heritage Fund and the INTERREG Atlantic Area programme of the European Regional Development Fund.

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**Delivering hands-on activities at Durham University’s ‘Celebrate Science’ family festival.**



# A New Geoeducational Programme in Troodos Geopark

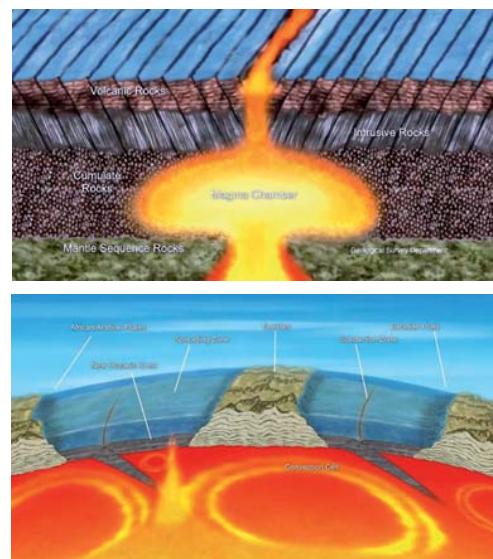


Photo of the  
Kids' Room  
within the  
TUGGp Visitor  
Centre.

The Troodos UNESCO Global Geopark which is located in a mountainous area in the heart of the island of Cyprus, consists of well-preserved and well-exposed rocks that were formed in the depths of the ancient Neotethys Ocean. They were subsequently uplifted to their present position, recording the complex geological processes of ocean floor spreading and plate tectonics during the last 92 million years. Today, it is considered to be the Earth's most complete land exposure of oceanic crust. Since the 1950's, the Troodos Oceanic Crust (TOC) has been a major research area for geoscientists and has played a significant role for the development of the divergent boundary theory and the formation of new oceanic crust, as we know it today.

The Geopark's 62 geosites and abandoned mines are important geological story tellers: each one reveals a piece of the Troodos Mountain Range's evolutionary history and has a unique scientific value. The conventional information panels that we established within the Visitor Centre and at geosites are, however, not easily understandable to the general public, as geological terms and diagrams that are essential to highlight the geological importance and uniqueness of each site cannot be simplified.

We therefore decided to develop, in parallel, a geo-educational tool appropriate for the general public, based on simplified cartoon animations. The new geo-educational programme involves a number of 2D and 3D animations showing how the rocks (mantle, plutonic and extrusive) and chemical sediments of the TOC were formed and uplifted to their present position. The animations are screened in a specially-designed room (Kids' Room) of the Visitor Centre, as part of the guided tour provided by the Centre's geologists.



Snapshot of the  
3D animation of  
the successive  
subduction  
zones created  
92 million years  
ago due to the  
convergence of the  
African and  
Eurasian plates.

Snapshot of the  
3D animation  
of a simplified  
model that  
explains the  
formation of the  
Troodos Oceanic  
Crust.

Furthermore, our group of experts decided to enrich the geo-educational programme by broadening its geoscientific content to include animations of the structure of the Earth, plate tectonics, faults, earthquakes, seismic waves and seismological networks, to achieve a more holistic explanation of the Troodos geological history.

We strongly believe that this geo-educational tool succeeds in decoding, to the required level, the complicated geodynamic processes of the Earth that occurred in the area of the Eastern Mediterranean during the last 92 million years and that it will be well received by the general public.

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# The Educational Collection of Rocks and Minerals in the Tuscan Mining Geopark

Once upon a time, in primary schools, children were taught that the Earth is divided into three realms: animal, vegetable and mineral. The first two are more familiar and easily recognizable. The third, the mineral realm, we ignore, perhaps because it is hidden, difficult to understand and inanimate. And yet it plays a leading role in the history of our planet, beginning 4.54 billion years ago.

The understanding of our territory starts from the knowledge about the rocks and minerals of the Geopark, especially because this is a mining park in which the millennia spanning mining history, are the most valuable component of the region's heritage. Mining which began in the Copper Age, developed during the Etruscan and Roman civilizations and expanded considerably from the Middle Ages until the 20th century when an increase in mining research resulted in the opening of numerous important mines.

Knowing the Geopark and its geological and mining history also requires careful observation of the minerals and rocks that are encountered along geotrails, in geosites and, with the help of expert guides, being able to touch and examine their properties and learn how to

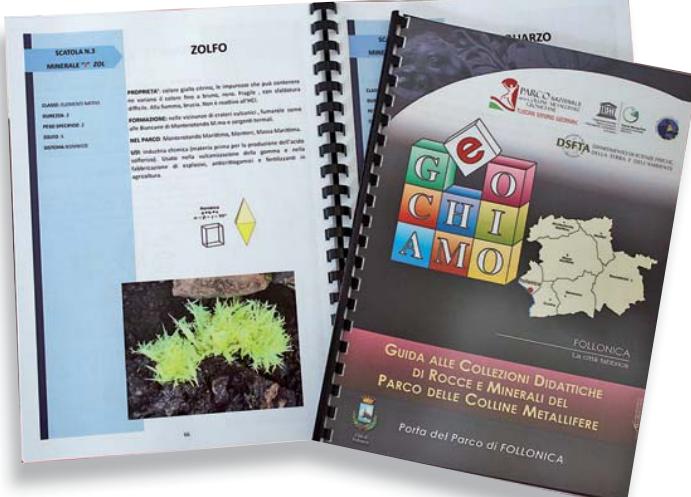
**The guide to the collection and an example of the educational sheet for a specific mineral.**



**Examples of the boxes of rocks and minerals customized for the Gateways to the Park.**



**Boxes with examples of rocks and minerals from the Tuscan Mining UNESCO Global Geopark.**



identify them during field excursions. For this purpose small collections, representative of the most common rocks and minerals to assist the guides during field excursions and educational in the Gateways to the Park, were created.

The Rock and Mineral Collection, the Geological Guide and Descriptive Sheets.

The educational collection of rocks and minerals and the associated guide, consisting of sixty samples, are organized in three boxes, each box has been customized for each Gateway to the Park. The boxes are divided into twenty small compartments each containing a sample with a label and an identification code.

The guide contains three diagrams showing the arrangement of the samples within the three boxes in order to facilitate the correct repositioning of the samples after use. To avoid confusion each sample has an affixed identification code which enables immediate recognition. The identification code for each sample is also shown in the legend of the geological map of the park, included in the guide, thus making it possible to locate the place of origin of the rock and mineral samples in the collection.

Each sample is accompanied by a descriptive sheet, in which, in addition to the number and the identification code, the following information is provided: the geological age, a photograph and some basic information (composition, appearance, genesis, properties, uses) and useful ideas for subsequent research.

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# Beigua UNESCO Global Geopark's Junior Geoparker Programme

An example of the Beigua UNESCO Global Geopark's passport for Junior Geoparkers.



Junior Geoparkers "in action" during one of the workshops.

**S**pending a day in the Beigua Geopark is not only a way for our children to have some fun, but it is also a unique opportunity to teach them about the beauty of nature in all its forms, to connect with the five senses to a new world, alive and engaging, very different from the virtual world with which they interact on a daily basis by using smartphones and playing video games.

To immerse oneself in nature, to relive the excitement of being an explorer, to rediscover a sense of wonder by observing the precise systems that govern the life of the small animals or flowers of Beigua Geopark, to get in tune with the Earth and understand the importance of biodiversity, these are all elements that will encourage the development of a sense of responsibility towards the environment.

The Junior Geoparker Programme provides educational workshops, field excursions and games

that enable children to learn in a fun way how natural cycles work by becoming, for one day, geologists, botanists, birdwatchers or young explorers.

Surprised faces, attentive looks, a lot of curiosity and an inexhaustible desire to discover new things: the Geopark Guides are always able to create magic by stimulating all the senses of children to capture the scents and sounds of nature, the shapes and colours that define the landscape, giving space to their imagination, without forgetting that everything they learn today in contact with nature, such as the importance of protecting wildlife and respecting the rules of the mountain, contributes to developing the adults they will be tomorrow.

Throughout all seasons, the little explorers of nature have followed the traces of the animals that inhabit the forest, walked with snowshoes on white tracks, watched the migratory birds that circle in the skies of Beigua and have travelled back in time by finding fossils that tell some of the story of our world. But above all, they learned to protect nature and to always have a curious and respectful attitude to the environment that surrounds them.

During the last year more than a hundred children participated in nature activities involving short hikes and educational workshops. All received a passport to record the completed activities. Those who collected 10 stamps became Junior Geoparkers and young ambassadors of Beigua UNESCO Global Geopark. Maybe, one day they be our trail guides!

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# Guardians of the Earth in the Bohemian Paradise Ecological Education Centre



**Pupils learn about the interconnectivity of the food cycle.**

The Bohemian Paradise Ecological Education Centre (BPEEC) is one of the founding organizations of the Bohemian Paradise Geopark. The BPEEC's mission is to motivate society through sustainable environmental education and respect for nature. The centre is located in the popular Sedmihorky Campsite, very close to Hruboskalsko Rock City geosite and to the Geopark office (Turnov Municipality). It provides one-day and residential environmental education programmes and, since 2009, the Guardians of the Earth Programme created by the Earth Education Institute at BPEEC.

Earth Education represents an environmental education initiative that originated in the United States in the 1970s and has spread throughout the world. The founder of the movement, Professor Steve van Matre, who originally worked as a leisure instructor in summer camps, currently lectures mainly on environmental education and interpretation. Earth Education builds on very sophisticated programmes that have been developed for several years and are then adopted by collaborating centres.

**Pupils learn about natural recycling processes.**

The Guardians of the Earth is an international programme of the Earth Education organization and it is implemented in the same form in several countries. It is targeted at pupils from 10 to 12 years of age. Children stay two and half days in the centre and then continue to work at school for two months. During the programme, pupils undergo a coherent sequence of activities focused both on knowledge and experience. The secretive character E.M, who guides pupils through the programme as well as in searching for the keys to reveal the message hidden in the mysterious chests, is a great motivator for the pupils. On completing the programme, pupils should have a better understanding of selected ecological principles (e.g. energy flows or mass cycle) and develop their own relation to nature. Emphasis is placed on the pupils' individual responsible environmental behaviour.

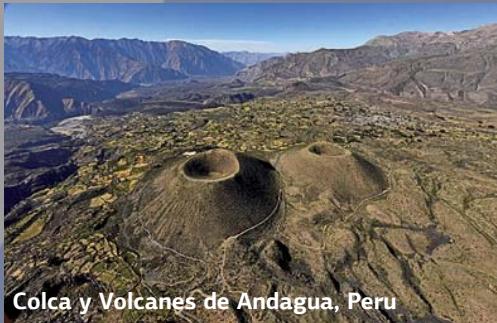
BPEEC succeeded in adopting and testing this programme in local settings. The programme which has been delivered several times a year since 2013, provides a very efficient environmental education and has a deep impact in changing pupil behaviour. However, it is not free of charge. The programme is very demanding on the instructors' time and teaching skills and in addition is dependent on good weather conditions. Therefore a maximum of six courses per school year are available. However, in order to meet the high demand for the programme, the BPEEC has expanded the programme to include other environmental education centres, which are gradually adopting it and thus expanding its availability throughout the Czech Republic. In this way, we hope that in the near future, it will be available to all potential candidates not only in the Bohemian Paradise Geopark but also in other parts of our country.

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**Pupils learning about energy cycles in nature in the Guardians of the Earth Programme.**



# New UNESCO Global Geoparks



Colca y Volcanes de Andagua, Peru



Courcel Mountains, Spain



Imbabura, Ecuador



Jiuahuashan, China



Kütralkura, Chile



Trollfjell, Norway



Vis Archipelago, Croatia



Yimengshan, China

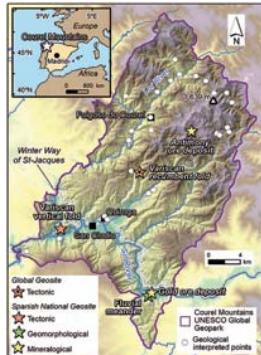
The UNESCO Executive Board during its 126 session on April 17th 2019 unanimously endorsed the decisions made by the UNESCO Global Geoparks Council during its third session in Adamello Brenta UNESCO Global Geopark, in Italy, last September and eight territories demonstrating the great diversity of our planet's geology have received the UNESCO Global Geopark label. Thus from April 17th 2019 there are 147 UNESCO Global Geoparks in 41 countries!

## The new UNESCO Global Geoparks are:

- Colca y Volcanes de Andagua, Peru
- Courcel Mountains, Spain
- Imbabura, Ecuador
- Jiuahuashan, China
- Kütralkura, Chile
- Trollfjell, Norway
- Vis Archipelago, Croatia
- Yimengshan, China

Learn more about the new UNESCO Global Geoparks in Europe! Presentations in pages 63-65.

## Man and geology in the Courel Mountains Geopark



**A map of the Courel Mountains UNESCO Global Geopark showing the positions of one globally significant geosite and four Spanish National Geosites.**

The Courel Mountains Geopark has an area of 578 km<sup>2</sup>, an altitude of up to 1,641 m and a population of 5,400 with 9.3 inhabitants/km<sup>2</sup>. The area's geology consists predominantly of lower and middle Palaeozoic rocks. One geosite of international significance is represented by a unique 45-km-long Variscan recumbent fold in rocks ranging in age from Precambrian to Carboniferous. This sequence hosts superb sites with fossils of archaeocyathids, trilobites, brachiopods, cephalopods, conodonts and crinoids, as well as antimony and iron ore deposits. Four geosites of national significance include features of tectonic, mineralogical and geomorphological interest. The landscape is molded by rivers with canyons up to 400 m deep, 30 m high waterfalls, alluvial fans and river terraces. The Geopark's karst landscape includes seven kilometres of caves. The highest summits are associated with glacial ice sculpted cirques from the last Glacial Period. The area's deciduous forests, inhabited by brown bear, deer, wild boar and other fauna, contribute to one of the most ecologically diverse areas in northwest Spain. All are protected as Sites of Community Importance.

**View of the unique Variscan 45-km-long recumbent fold deforming rocks ranging from Precambrian to Carboniferous in age.**

The Geopark's geology is closely linked with its rich cultural history. Neolithic people colonized the Courel Mountains approximately 4,000 years ago creating petroglyphs, stone tombs and paintings within deep-mountain caves. Sixty five hillforts were constructed during the Iron Age

and the Roman occupation (1<sup>st</sup>-2<sup>nd</sup> centuries AD) using local shale and quartzite for dwellings and defensive walls built along natural, up to 200 m high scarps. Local slate was used to roof the buildings. The Romans mined gold ore from the bedrock, extracted gold from alluvial sediments and excavated water channels and tunnels to divert rivers. Following the abandonment of the hillforts, new settlements were developed on alluvial fans, river terraces, on the sites of ancient Roman mines and large landslides. These settlements, together with Medieval castles, introduced the use of Palaeozoic limestone and gneiss and Cenozoic rocks as new construction materials, whilst granite was imported to build the oldest 12<sup>th</sup> century abbey. Coevally, 12 preserved lime kilns supplied local demands and, later, mines provided iron for 15 traditional hydraulic workshops. These ancient settlements evolved giving rise to the modern traditional villages. Nowadays, the geology is still the economic driver for the Courel Mountains. Quarrying provides aggregates for local use, and roofing slate for buildings in Spain and Central Europe.

The Courel Mountains Geopark is managed by an association of three municipalities, Folgoso do Courel, Ribas de Sil and Quiroga, together with the Working Group for Añares-Courel Rural Development. Within its infrastructures, the Geopark has three museums and interpretation centres (another in construction) and 25 geologically interpreted sites promoting the geoheritage in a format that appeals to tourists. The area also includes the famous Winter Way of St-Jacques. The Geopark organizes exhibitions and festivals promoting local products (wine, chestnuts, olive oil, honey), guides groups through the territory and assists the private sector with cultural and outdoor activities (trekking, canyoning). For a wonderful stay, the Geopark recommends 45 bar-restaurants, 25 hotels and hostels, a camping area (~700 beds) and apartments in traditional villages. However, our flagship is the education programme for local students, so-called Xeopícaros ("geo-pupils"), which involves both field and classroom activities.

**Remains of a Roman hill fort in the Courel Mountains Geopark.**

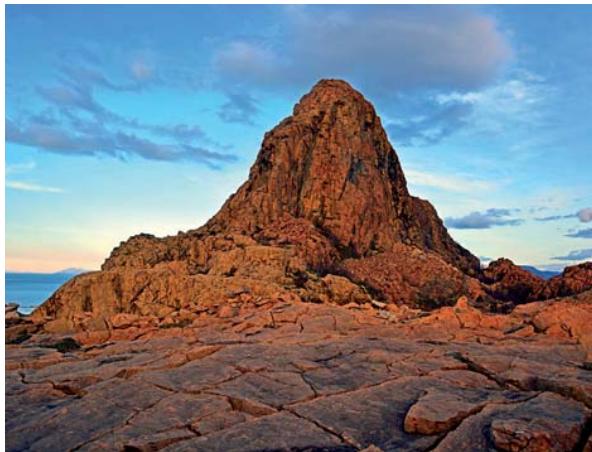


# Trollfjell UNESCO Global Geopark, Norway

## The northernmost UNESCO Global Geopark



**Mount Steininstind on the island of Leka - a landmark consisting of the igneous rock dunite, a major constituent of the Earth's mantle, and part of the islands outstanding ophiolite complex.**  
 (Photo by Kristin Fløa)



**T**rollfjell Geopark is situated on the Norwegian coast, just south of the Arctic Circle, and displays a 500 million-year-long geological macro-cycle – from ocean to ocean. 67 % of the park consists of sea with more than 12 000 islands, islets and skerries.

### Geological macro-cycle

The bedrock in Trollfjell is composed of rocks formed beneath, within and at the margin of an ancient ocean – the lapetus Ocean. They display the architecture of an oceanic crust and the transition to continental settings, as well as the final closure of this ocean resulting in the continent-continent collision that formed the Caledonian mountain chain 400 million years ago.

The present landscape forms the margin of the 'new' Atlantic Ocean. Glacial erosion has uncovered the ancient rocks and shaped a coastal landscape of monumental mountains rising from the strandflat with its numerous islands. The land was uplifted several hundred metres in response to isostatic rebound since the last Ice Age, and the relative sea level has fallen more than 100 metres. Ancient shorelines can be seen up to the 100 metre level, where traces of the first settlers who arrived 11,000 years ago are found.

### The fertile strandflat

The strandflat is by far the most dominant landscape feature in the Geopark. This is a low, flat and wide platform, supporting thousands of stacks, skerries and small islands, as well as shallow areas of sea. It is a globally rare geomorphological feature, and Trollfjell Geopark, where the platform is up to 60 km wide, is one of the very best examples.

The strandflat with its rich marine resources has played a fundamental role in the history of human settlement along the Norwegian coast and attracted people as the ice receded. They settled on the emerging islands and lived by fishing, hunting and gathering. The frugal symbiosis between man and nature gradually developed to include the harvesting of down from wild eider duck nests, a rare tradition which in 2004 re-

sulted in the Vega Archipelago being included in the UNESCO World List of Cultural and Natural Heritage.

Isostatic uplift of the landmass continues to the present day, making it an ever-unfolding geological process. Trollfjell Geopark aims to get local communities to take responsibility and ownership for the geoheritage without legal measures. We believe this can be achieved by promoting sustainable economic activities such as geotourism and by increasing public knowledge about geology.

### Trollfjell facts

The Geopark covers an area of 10, 082 km<sup>2</sup>, of which 33 % is land and 67 % sea. It contains six municipal boroughs (Brønnøy, Vega, Vefsn, Sømna, Bindal and Leka) in two counties (Trøndelag and Nordland) and has 13,700 inhabitants.

The Geopark was established in 2013 as a project managed by the South Helgeland Regional Council, which is owned by the six boroughs. The Geopark has joint operational management with Trollfjell Outdoor Council – a collaboration based on overlapping tasks, creating synergies for the public and local communities.

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

**The strandflat is at its widest in the Vega archipelago. Old settlements can be seen in the foreground on the islands.**  
 (Photo by Inge Ove Tysnes)



# Vis Archipelago UNESCO Global Geopark, Croatia

## One of the last Mediterranean Paradise Oases in the Adriatic Sea



**Komiža, a coastal town on the western coast of Vis.**

(Photo by Ivo Pervan-min)

**O**n April 17, 2019 UNESCO's Executive Board approved the designation of Vis Archipelago as a UNESCO Global Geopark.

The Vis Archipelago in the central Adriatic Sea, consisting of 10 islands with a combined area of less than 100 km<sup>2</sup>, is situated within a 6,601 km<sup>2</sup> triangle-shaped area. The largest island of Vis with an area of 89.72 km<sup>2</sup> has a population of 3,617 inhabitants.

The islands of the Vis Archipelago have the most diverse rock formations in the region. In Triassic times, lava flows, thick layers of salt and associated sedimentary rocks accumulated in a fault defined basin created during the breakup of the supercontinent Pangea. The Triassic rocks were subsequently buried beneath the few thousand metres thick carbonate sequence of the Adriatic Platform. From Miocene times the islands were uplifted by upward moving salt diapirs which intrude the sedimentary cover. During the last Ice Age, when the sea level was up to 120 metres lower than today, huge deposits of sand carried by strong winds from the Adriatic steppe formed sand dunes in the northeastern region of Vis.

The area of the Vis Archipelago is unique in the Adriatic in terms of its biological diversity. In 2003 the World Wildlife Fund included the Vis Archipelago in the Adriatic Blue Corridor (2003) and defined the area as one of the ten "last paradise oases in the Mediterranean". The islands of the Vis Archipelago and the surrounding submarine area are also included in the EU Natura 2000 programme.

The oldest city in Croatia, Issa, founded on the island of Vis by Greek colonists in the early 4th century BC was the first centre of urban civilization on the eastern Adriatic coast. The settlers introduced the

use of money and developed a culture involving the production of wine, literacy, literature and theatre.

The Adriatic fishing industry was developed on the island of Vis and fishermen from the island pioneered the 20th-century modern fisheries in America. In 2017 Croatia's Ministry of Culture recognized the Falkuša, probably one of the oldest types of fishing boats in the Mediterranean, and the "Cokavian" dialect of Vis as significant components of Croatia's intangible heritage.

The Vis Archipelago Geopark has three employees: a geologist, biologist and a philologist. It has the strong support of the local community which helps with the development of joint projects. One project, the Visitor Centre, is situated on the island of Biševo, the location of the spectacular Blue Cave. The Geopark organizes educational programmes for the local people and initiates new projects that focus on sustainable development and geotourism.

The statements "Geoparks are not just about rocks they are about people," (Chris Woodley-Stewart North Pennines AONB UNESCO Global Geopark) and "Geoparks are people!" (Patrick J. McKeever, formally UNESCO's Chief of Earth Sciences) emphasize the main focus of UNESCO Global Geoparks. The Vis Archipelago Geopark, with the smallest population in the UNESCO family of Geoparks, focuses particularly on educating the younger generations, since heritage without people ceases to be heritage.

The Vis Archipelago Geopark project is based on the global significance of its geological, natural, cultural, tangible and intangible heritage and is a response to the challenge of survival.

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**The 4th century BC Bronze head of Artemis found on the island of Vis.**

(Photo by Ivo Pervan-min)



**The Blue Cave situated on the island of Biševo.**

(Photo by Ivo Pervan-min)

**Aerial view of Budihovac Island.**

(Photo by Ivo Pervan-min)



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# International Intensive Course on Geoparks 2020

# UNESCO Global Geoparks and Sustainability



LESVOS ISLAND  
1-10 June 2020  
GREECE

Registration:

[www.petrifiedforest.gr/geoparks 2020](http://www.petrifiedforest.gr/geoparks 2020)

Information - Secretariat:

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



# FUN Geopark

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

**September 17-20 2020**

**Jeju Island Global Geopark Republic of Korea**  
**EGN CC Meeting: September 16<sup>th</sup>**

### Welcome Message

Jeju Island UGGp has organized a preparatory committee for the successful implementation of the 9th International Conference on UNESCO Global Geoparks. As co-chairman of this committee, I would like to welcome you to Jeju Island Geopark.

The theme of the 9<sup>th</sup> 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.

By diversifying the sessions and field trips, participants are also expected 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, Jeju

### Chairman of the Organizing Committee

INFORMATION: <https://www.jejuggn2020.org/>

### REGISTRATION

The official registration for the 9th International Conference on UNESCO Global Geoparks will start in February 2020. Please register for participation through the registration webpage.

The regular fee (\$300) applies to those who register by May 1<sup>st</sup>, 2020, and the registration fee will gradually increase afterwards.

GGN 2020 Secretariat

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