

EUROPEAN GEO PARKS NETWORK

European Geoparks Magazine • Issue 12

Geoparks: Live the experience



THE EUROPEAN GEOPARKS NETWORK

www.europeangeoparks.org

2015

30 March – 1 April 2015:
35th European Geoparks Meeting
Paris- UNESCO Headquarters

May – June 2015:
European Geoparks Week 2015

10 - 14 June 2015:
7th Workshop of the Italian Geoparks
Rethink of the Planet Earth - experience of
communication and promotion of the geo-
environmental values
Sesia - Val Grande Geopark

23 June – 3 July 2015:
International Intensive Course on Geoparks
Lesvos island Geopark – Greece

3-6 September 2015:
13th European Geoparks Conference
Rokua Geopark – Finland

16-20 September 2015:
4th Asian - Pacific Geoparks Conference
San'in - Kaigan Geopark - Japan

November 2015:
UNESCO General Conference
Paris- UNESCO Headquarters

2016

March 2016:
37th European Geoparks Meeting
Basque Coast Geopark – Spain

1-12 June 2016:
International Intensive Course on Geoparks
Lesvos island Geopark – Greece

September 2016:
7th International UNESCO Conference on Geoparks
English Riviera Geopark - UK

2017

March 2017:
39th European Geoparks Meeting
Burren and Cliffs of Moher Geopark, Ireland



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the Lake Oulujärvi, the Gneiss bedrock is about 2,7
billion years old and belongs to the oldest bedrock
zone in the EU. Photographer: Markus Sirkka

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EUROPEAN GEOLOGICAL PARKS NETWORK

Magazine 12 provides an overview of activities and achievements in the European Geoparks Network (EGN) during 2014. These include the report of the 34th EGN Coordination Committee meeting hosted by Geopark Harz Braunschweigerland Ostfalen; celebrating European Geoparks Week; the highly successful 6th International UNESCO Conference on Geoparks (Canada); the creation of the Global Geoparks Association and progress in discussions between the Global Geoparks Network and UNESCO to develop a UNESCO Global Geoparks Initiative. In 2014 the EGN increased to 64 members with the addition of the following new Geoparks: Molina Alto Tajo Geopark (Spain), El Hierro Geopark (Spain), Monts d'Ardèche Geopark (France), Ore of the Alps Geopark, Odsherred Geopark (Denmark) and Terras de Cavaleiros Geopark (Portugal).

The 6th International UNESCO Conference, hosted by Stonehammer Geopark, New Brunswick, Canada focussed on seven themes: Geoparks and the sustainable use of natural resources; Engaging communities; Education and Interpretation in geoparks; Aspiring geoparks; Mature Geoparks; UNESCO collaboration and Intangible cultural heritage. The conference, attended by 480 delegates from 32 countries, adopted the Stonehammer Declaration.

In this issue, 34 articles explain how European geoparks contribute to conservation, education and promoting sustainable development through geotourism. They demonstrate how sharing information and working with communities, businesses and educational establishments safeguards sustainable development in geoparks. Bakony –Balaton and Sobrarbe Geoparks train guides to use the geological heritage as an economic resource. The National Park of Cilento, Vallo di Diano and Alburni – Geopark encourages young people to manage its geoheritage. The importance of geotopes and geosites is emphasized in contributions from the Basque Coast, Eisenwurzen and Swabian Alb Geoparks. Vulkan Eifel Geopark restored the Trautzberg Maar to create a new geotope. The design and maintenance of geotrails enhances geotourism in all parks. Beigua Geopark links sport and geoheritage along some of its trails. The Tuscan Mining Park's

geotrail highlights the territory's long history of silver mining. Vikos-Aoos Geopark presents nine new geotrails leading to karstic features in its landscape. Sierras Subbéticas Natural Park developed the "Cabra, Jurassic City", urban geological trail, while North Pennines AONB restored a shelter on the Iconic Pennines Way Trail. The Apuan Alps Geopark produced a new Hiking and Geotourist Map. Tourism provision also involves developing interpretive exhibitions and information centres; Sierra Norte de Sevilla Natural Park and TERRAvita Natur Park present examples of these activities.

All geoparks engage in formal and informal education projects. Rokua Geopark has created geopark schools in Finland. The 20 million year old fossilized ecosystem in Lesvos Geopark is the focus for an educational programme. The English Riviera and Sesia-Val Grande Geopark's are involved in partnerships involving student exchange programmes. Villuercas-Ibores-Jara Geopark is improving its educational resources; Chelmos Vouraikos Geopark increases its visibility through educational and networking activities. The contributions from Geo-Naturpark Bergstrasse Odenwald, Naturtejo Geopark and Muskau Arch Geopark emphasize the importance of international collaboration. Examples of engaging with communities and businesses are presented in contributions from Arouca, Burren, Katla and Magma Geoparks.

The sustainable development of geoparks is also dependant on research and new initiatives. Carnic Alps Geopark highlights how palaeontological research contributes to the Geopark's resources. Cabo de Gata Geopark seeks to link its communities through an intangible heritage project. The North West Highland Geopark proposes a social enterprise model to create revenue streams and ensure financial security. The contributions by El Hierro, Ore of the Alps, Odsherred and Terras de Cavaleiros geoparks raise awareness of the contributions that these new Geoparks can make to the development of the EGN and GGN.

Tony Ramsay
Member of the Editorial Board

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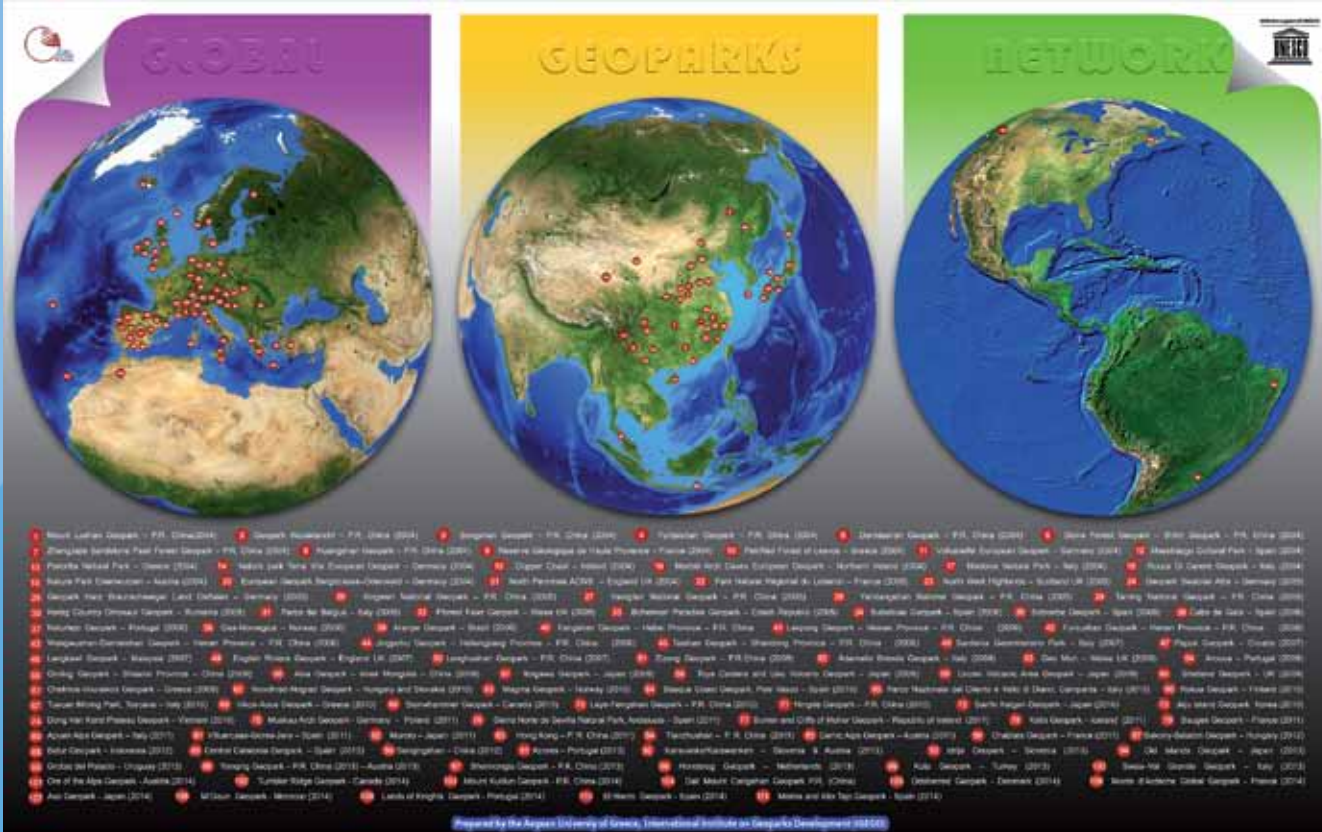
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Global Geoparks Network:

From a voluntary Network to an International Non-profit Association

The GGN was founded in 2004 as an international partnership under the umbrella of UNESCO. It serves to develop models of best practice and establish quality-standards for territories that integrate the protection and preservation of Earth heritage sites within a strategy for regional sustainable economic development. By 2014 the GGN expanded to include 111 members in 32 countries on 5 continents.

Over recent years there have been increasingly detailed discussions within the Global Geoparks Network (GGN) and its regional Geopark Networks (EGN, APGN) on formalizing the link between the Global Geoparks Network and UNESCO through the creation of UNESCO Global Geoparks. In order to ensure that the GGN will continue to play a key role in the proposed new UNESCO Global Geoparks, the GGN must obtain “legal character” so that it can sign a memorandum of understanding with UNESCO.

The GGN Bureau, the governing body of the GGN, discussed, in an extraordinary meeting held on Lesbos Island in 25 June 2014, the latest developments in establishing UNESCO Global Geoparks. The Bureau debated the problems, strengths, weaknesses, threats and opportunities for consideration in the concluding

negotiations of the UNESCO Working Group on Geoparks. The purpose of these negotiations was to finalize the UNESCO Global Geoparks documents, e.g. operational guidelines, financing UNESCO Global Geoparks, the GGN legal status, the evaluation of applications in cases of territorial disputes and other open issues.

The GGN Bureau recognized that the establishment of a legal entity for the GGN is necessary for various reasons:

- The representation of the GGN in the new UNESCO Global Geoparks coordination and decision making bodies (UNESCO Global Geoparks Council and Bureau) and the proposal of the 12 members in the UNESCO Global Geoparks Council.
- The establishment of a roster of Geopark evaluators and the evaluation and revalidation procedure for the UNESCO Global Geoparks.
- The mechanism for collecting the financial contribution to UNESCO Global Geoparks.

The GGN Bureau examined different models for establishing an Association and concluded unanimously that the model that best coincides with and covers the legal status of the existing Global Geoparks as well as the legal status for similar global institutions, is the International Council of Museums’ model (ICOM). The ICOM



has members in almost all UNESCO member countries and has a privileged relationship with UNESCO.

The GGN Bureau discussed and agreed the statutes of the Association which are based on the existing GGN Operational Guidelines and used the ICOM model for a Non-profit International Association according to French law. The GGN Association office will be at the Haute Provence Geopark in France. The membership fee for each Global Geopark was also agreed.

The official documents for the establishment of the Association were distributed to all Geoparks for approval at the GGN General Assembly held in Canada during the 6th International Conference on Geoparks. The founding Executive Board of the Global Geopark Network (GGN) Association, elected by the GGN Bureau, concluded the necessary legal procedures in order for the GGN Association to have legal status, based on:

- a. The decision of the GGN Bureau.
- b. The official letters of the Managing Authority from the broad majority of the Global Geoparks expressing their agreement to GGN Bureau decisions.
- c. The decision of the GGN - General Assembly in Canada on 19 September 2014, who unanimously endorsed the decisions of the GGN Bureau to transfer the GGN status from a Voluntary Network to an International Non-profit Association according to French law, as well as the endorsement of the GGN Association statutes and the approval of an annual financial contribution to UNESCO of not less than \$1000 USD per Global Geopark.

The **Global Geopark Network Association status** has been recognized according to French law and became a legal entity in September 2014.

All information regarding the statutes and the operation procedures can be found at www.globalgeoparksnetwork.org

Following the decisions of the GGN General Assembly, the GGN Association Executive Board decided to include, as institutional members of the Association, all Global Geoparks who expressed by official letter their agreement to the GGN Association statutes and annual membership fee.

The GGN Executive Board also agreed the criteria and procedures for enrolment of the GGN Individual Members (Geopark professionals).

All information can be found at the Association web site www.globalgeoparksnetwork.org

Following the establishment of the GGN Association, and during the 7th UNESCO Working Group on Geoparks, the GGN representatives contributed to the creation of the International Geosciences and Geoparks Programme, which includes two sub-programmes, the International

al Geosciences Programme (a joint programme between UNESCO and IUGS) and the UNESCO Global Geoparks (a joint programme between UNESCO and the GGN).

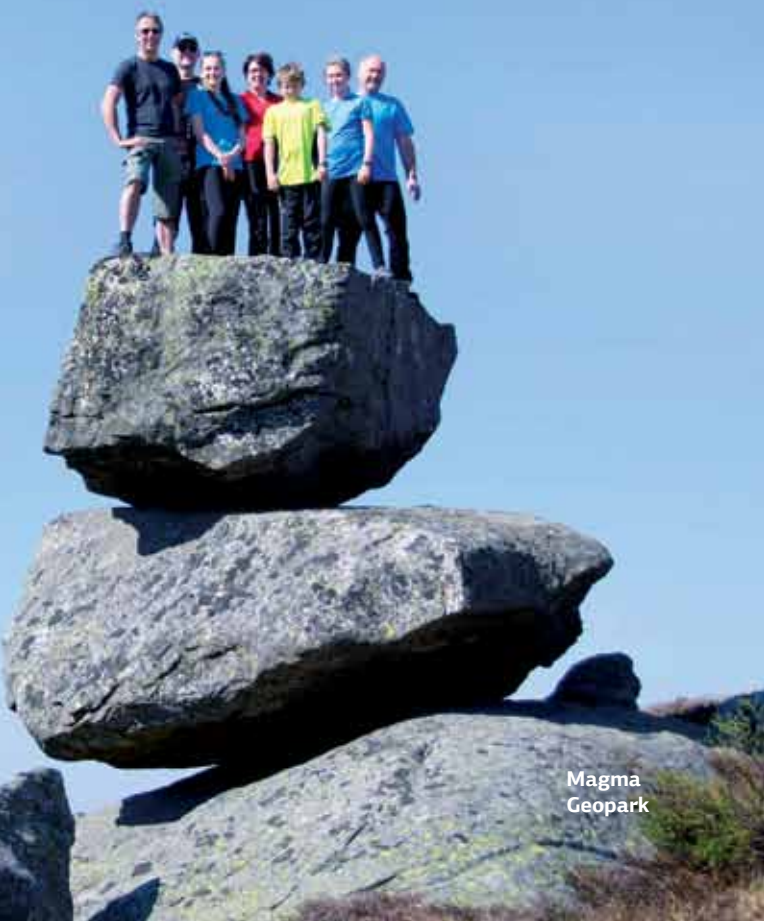
The documents approved were:

1. The IGGP statutes.
2. The UNESCO Geoparks operational guidelines.

The WG's proposal to the UNESCO Executive Board concerning the establishment of the new IGGP and the UNESCO Global Geoparks, was also discussed. This document presents, among others, the economic impact of the Global Geoparks activities based on the document of the GGN's total budget for 2014 prepared by the GGN. This document also includes the proposal for the transition of the current members of GGN. to the UNESCO Global Geoparks. These Geoparks will automatically become UNESCO Global Geoparks subject to a letter of approval from each country's National Commission for UNESCO or from a relevant Government body in charge of relations with UNESCO.

Thus the GGN Association becomes a key the UNESCO Global Geoparks and will continue its current role in developing Geoparks across the globe.

Now we are faced by the remaining two final stages in order to conclude successfully this adventure which started before the UNESCO 35th General Conference in 2009. These remaining stages include the decision of the UNESCO Executive Board in April 2015 and the endorsement of this decision during the 38th General Conference of UNESCO in November 2015.



Magma Geopark



Representative of the First Nation Community greeting the Conference at the opening ceremony

6th International UNESCO Conference on Global Geoparks

Stonehammer Geopark, welcomed 480 participants from 32 countries in the Saint John region of Canada at the 6th International UNESCO Conference on Global Geoparks from 18th to 22th September 2014.

As North America's first Global Geopark, Stonehammer Geopark is located in Southern New Brunswick on the East Coast of Canada. Stonehammer Geopark is a geological park where you can experience a billion years of Earth's history. The landscape has been created by the collision of continents, the closing and opening of oceans, volcanoes, earthquakes, ice ages and climate change. The rocks in the Stonehammer Geopark have been witness to the evolution of life, including the first discovery of Precambrian stromatolite fossils, the 'Cambrian Explosion' of life, the evolution of vertebrates and the emergence of life on land. The Geopark includes geological stories from the late Precambrian time, a billion years ago, to the most recent Ice Age, and almost everything between. Stonehammer Geopark incorporates more than 60 significant geological and fossil sites, including more than 10 publicly accessible sites. Stonehammer is a community-supported organization comprised of site owners, tourism operators, members of the community and other stakeholders. The Geopark encompasses 2500 square kilometres and extends

from Lepreau Falls to Norton and from the Fundy Trail to the Kingston Peninsula.

The overall theme for the conference focused on **Connecting**. Geoparks are concerned with **Connecting** people to the Earth in a way that is meaningful to them and the conference engaged in **Connecting** delegates with each other and our community.

Themes for oral presentations and poster submissions were as follows:

1. Geoparks and sustainable use of natural resources

Geological heritage is key for understanding the environment and the sustainable use of natural resources (water, petroleum and minerals) and is crucial for the responsible use of land.

2. Engaging Communities

This theme is for geoparks to share their success stories in engaging their communities.

3. Education and Interpretation in Geoparks

Educational programmes led by geoparks in schools or other community institutions as well as successful examples of how the subject matter was easily conveyed, i.e. great examples of interpreting earth science in a simple and easily understood manner.



4. Aspiring Geoparks

Presentation of projects by aspiring geoparks, guidelines for the establishment of Geoparks in the GGN.

5. Mature Geoparks

What does it take to keep a geopark going? Share stories of success and failure through the re-evaluation process. This track is intended for geoparks that are well established (at least 4 years since initial designation) and have best practices to share on how they have managed to keep the momentum building in their communities, in their programming and with their stakeholders.

6. UNESCO Collaboration

Building relationships and developing partnerships between Global Geoparks and other UNESCO programs (Man and the Biosphere Programme, World Heritage Sites, International Geosciences Programme) that are near or within the footprint of the geopark.

7. Intangible Cultural Heritage

Living expressions and traditions that countless groups and communities worldwide have inherited from their ancestors and transmit to their descendants, in most cases orally, are a valuable component of geopark interpretation. This track is intended for geoparks who are currently interpreting intangible heritage.

The conference, the first to be organized in North America, marked an energetic decade in the existence of the Global Geoparks Network.

The success of the GGN was evident from the number of delegates who descended on Saint John to partake in the wide array of sessions, field-trips and cultural events.

The 6th International UNESCO Conference on Global Geoparks, under the aegis of UNESCO with the approval of General Secretary I. Bokova, was organized by the

Stonehammer Geopark, the first Global Geopark in North America with the support of many sponsors.

During the conference 11 new members were warmly welcomed into the Global Geopark Network bringing the membership to a total to 111 Geoparks from 32 countries. The new Geoparks are :

Children's chorus at the opening ceremony of the 6th International Conference on Geoparks

- Molina and Alto Tajo Global Geopark (Spain)**
- Ore of the Alps Global Geopark (Austria)**
- Tumbler Ridge Global Geopark (Canada)**
- Mount Kunlun Global Geopark (China)**
- Dali Mount Cangshan Global Geopark (China)**
- Odsherred Global Geopark (Denmark)**
- Monts d'Ardeche Global Geopark (France)**
- Aso Global Geopark (Japan)**
- M'Goun Global Geopark (Morocco)**
- Terras de Cabaleiros Global Geopark (Portugal)**
- El Hierro Global Geopark (Spain, Canary Islands Autonomous Region)**

Many aspiring geoparks also participated in the conference.

The Conference also adopted the **Stonehammer Declaration**.

The 6th International UNESCO Conference on Global Geoparks marked a successful decade of applying and developing the geopark concept which melds the natural landscape and the lives of a Geopark's resident communities into a harmonious and mutually beneficial mode of existence. The next decade will involve challenges as the Network continues to grow and as the geopark concept is embraced by more and more communities and governments. This will require hard work and dedication in maintaining, refining and promoting the geopark concept across the planet. Onwards and upwards!

The Stonehammer Declaration

The 6th International UNESCO Conference on Global Geoparks was held from September 19 to 22 2014 in Saint John, Stonehammer Global Geopark, Canada, and was attended by 450 delegates from 30 countries.

After deliberation, the delegates hereby affirm that:

1. The Global Geopark community fully endorses the efforts made following the decision of the 36th General Conference of UNESCO to improve cooperation between UNESCO and Global Geoparks through the establishment of UNESCO Global Geoparks within the framework of the International Geosciences and Geoparks Programme.

We very much welcome the increasing levels of support for Global Geoparks within UNESCO, we acknowledge the results of the consultations made by the Working Group on Geoparks formed following the decision of the 191st Executive Board meeting and expect that the present strong relationship between the Global Geoparks and UNESCO will be strengthened through the establishment of UNESCO Global Geoparks during the 38th UNESCO General Conference. In particular, we advocated that the Global Geoparks Network acquire a non-profit association legal status and will act as the advisory body to UNESCO, to continue the development of Global Geoparks around the world. The GGN shall maintain its consultative relations with UNESCO, though a Memorandum of Understanding. This is particularly important in the least developed areas of the world.

2. The Global Geopark community celebrated the 10th anniversary of the GGN and acknowledged the highly successful and rapidly evolving development that occurred with the support of the Earth Sciences Division of UNESCO following the GGN's initiation in 2004. The GGN expanded to include 111 members during the 6th International UNESCO Conference on Global Geoparks.

Global Geoparks are territories with a geological heritage of international significance that implement strategies for holistic heritage management, promotion and sustainable development that are innovative, integrated, and respectful of local traditions and desires. To keep growing, the GGN should insist on retaining the existing evaluation/revalidation system based on high quality criteria in Geopark management, operation and services to their visitors.

3. The GGN assists in the development of models of best practice and quality-standards for territories that integrate the protection and preservation of geoheritage sites within a strategy for regional sustainable economic development. Networking within the Global Geoparks Network is encouraged to strengthen the capacity of human resources through collaboration and co-operation. This will ensure the development and support of various advisory roles, networking programmes, research projects of common



interest and interrelated human activities within the GGN. The 6th International UNESCO Conference on Global Geoparks is a good example of capacity building.

4. The Global Geopark community encourages the efforts to strengthen the cooperation among local people, scientists and other experts, tourism industries, municipalities, central governments and other stakeholders for the development and operation of Geoparks.

Global Geoparks promote the links between geological heritage and all other aspects of the area's natural and cultural heritage, clearly demonstrating that geodiversity is the foundation of all ecosystems and the basis of human interaction with the landscape.

Geoparks use geo-scientific knowledge as a substantial element for nature conservation, geoheritage protection, environmental education, including natural disasters and climate change, geotourism development and efficient management in Geoparks. Every Global Geopark should have daily access to the expertise of geo-scientists. Therefore, effective sustainable development of our Geoparks as well as of our local communities will remain as a goal.

5. The Global Geopark community encourages the equitable geographical development of Global Geoparks and thus supports all efforts to expand Global Geoparks in those areas of the world that are currently under-represented in the GGN. The first Global Geopark Conference in North America has afforded the opportunity for aspiring Geoparks in the region to gain experience and knowledge of the Global Geoparks Network and has increased awareness of Geoparks. Delegates look forward to the development of a rich and vibrant North American Geoparks Network, based on the diverse geology and cultural heritage of the continent. Participation of First Nations at the opening ceremony provided a unique and inspiring message for delegates and for future North American Geoparks.

Agreed in Stonehammer Global Geopark
22-09-2014



34th European Geoparks Meeting

European Geoparks visiting the Geopark Harz • Braunschweiger Land • Ostfalen

The 34th EGN Coordination Committee Meeting took place from 2nd to 5th September 2014 in Wernigerode. About 100 representatives of the European Geoparks from 21 different countries discussed the results of evaluation and revalidation missions, new applications and common projects. As a result of the evaluation missions, six Geoparks were admitted as new members of the European and Global Geoparks Networks.

The most important issue was the collaboration with UNESCO regarding the development of a UNESCO-Geoparks-Programme. The German Vice Chancellor and Federal Minister for Economics and Energy, Sigmar Gabriel, presented short welcoming addresses to the Meeting by letter. Dr. Lutz Möller from the German UNESCO Commission was optimistic that the General Assembly of UNESCO will establish a UNESCO-Geoparks-Programme in autumn 2015. "The Global Geopark initiative brings together people from different continents and cultures, following the mandate of UNESCO to build peace in the mind of men and women", added Prof. Patrick McKeever on behalf of UNESCO.

During various field trips the delegates got to know the Geopark. A guided tour of Wernigerode led them through the small lanes and along the half-timbered houses in the town centre. In addition, they visited the Paläon Museum in Schöningen to see the oldest hunting weapons used by man. The Schöningen spears, which are about 300.000 years old, were discovered in an open cast lignite mine which can be viewed from the museum. The exhibits in the museum reveal the complex social structure of *Homo heidelbergensis* (Hei-

delberg man) and provide an insight into a palaeolithic landscape. In the Cathedral of Königslutter, the mayor of Königslutter, Alexander Hoppe, expressed his appreciation for the educational work of the Geopark and for its Information Centre in his town. The Cathedral, built by Italians, is an early example of European cooperation. Today the municipality of Königslutter is one of the main financial supporters of the Geopark.

The end-of-meeting excursion on 5th September included visits to the Lossen Monument, the Büchenberg Show Mine, Elbingerode, the Upper Harz Water Management System, a World Heritage Site, the Goetheplatz and the Brocken, the highest and most famous mountain in the Harz (1,141 m above sea level).

The Lossen Monument was erected in 1896 to commemorate the geologist Karl August Lossen, a member of the Prussian Geological Survey, Berlin and a professor at the Royal Mining Academy of Berlin whose research contributed significantly to understanding the geology of the Harz region.

The Harz region is famous both for its forests and its mineral wealth. Members of the field excursion spent some time in the Büchenberg Show Mine, an iron ore mine and a monument to historical mining methods. The machines used to extract the ore still function and the tunnel walls contain colorful exposures of the ore and various rock types. The remains of the longest conveyor system in Europe, used to transport the ore, can be seen at the surface.

The Goetheplatz Geosite, situated in the area of the Rehberger Grabenweg, was visited by Johann Wolfgang von Goethe in 1783. Here the contact between the underlying Harz Granite igneous intrusion



Lossen-Monument: Some of the participants in front of the Lossen-Monument during the end-of meeting field trip in the Harz. (Photo: Dr. Klaus George).



The guided tour of Wernigerode started from the market square. (Photo: Andrea Faust).



Königslutter Cathedral: The mayor of Königslutter, Alexander Hoppe (r.) and the Chairman of the Advisory Board of the Geopark, Dr. Volker Wilde. (Photo: Dr. Klaus George).



The Banner welcoming the delegates of the EGN Coordination Committee in Wernigerode town centre. (Photo: Dr. Klaus George).

and overlying older sedimentary rocks is exposed. The heat from the molten granite, intruded approximately 295 million years ago, baked the sedimentary rocks at the contact zone to produce a rock called hornfels. Based on the rock sequence at this site Goethe proposed an older age for the granite which he suggested was formed by the crystallization of minerals from sea water and a younger age for the hornfels. The hypothesis advocated by Goethe, known as neptunism, postulated that igneous crystalline rocks formed by crystallization from sea water. This was superseded by the views of the plutonists who correctly interpreted these rocks as the product of crystallization from a molten state. Therefore, the Goetheplatz is an important site for the development of the understanding of Earth processes and in the history of geology.

The visit to the Brocken involved a ride on the narrow gauge Brocken Railway Line, on a 700hp steam train. The ride, on a beautiful autumn day, climbed steeply through the spruce tree covered slopes which give way to the windswept Brocken Plateau providing spectacular views across the Harz Mountains and the Geopark. The plateau also hosts a famous botanic garden with over 1,600 alpine plants. The group spent some time in the Brocken House Museum where exhibitions on four

floors present the story of the witches and also the fascinating history of this site as a military base and border post during the 20th century. However, the Brocken is best known for its place in German folklore, a place of witches and devils immortalized in Goethe's story of Faust and his pact with the devil.

In addition, the Meeting also promoted regional development in the Geopark. Many supportive members of the Regional Association Harz, one of the responsible organizations for the Geopark Harz · Braunschweiger Land · Ostfalen, were involved in organizing the Meeting. The Hotel Blocksberg, for example, accommodated some of the delegates and was involved in catering for the meeting.

The participants enjoyed their stay in the second largest Geopark of Europe: "I learned very much in this Geopark in which the nature and culture are so clearly connected with the older and more recent history", summarised Dan Grigorescu from Hateg Country Dinosaurs Geopark, Romania.

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Brockenhaus: A guided tour of the Brocken Museum, the highest point of the Harz. (Photo: Andrea Faust).



Show Mine: An iron ore vein in the Büchenberg Show Mine. (Photo: Dr. Klaus George).

The European Geoparks

Not just a series of guided walks – seeking



Adamello-Brenta Geopark



Burren and Cliffs of Moher Geopark



Bakony-Balaton Geopark



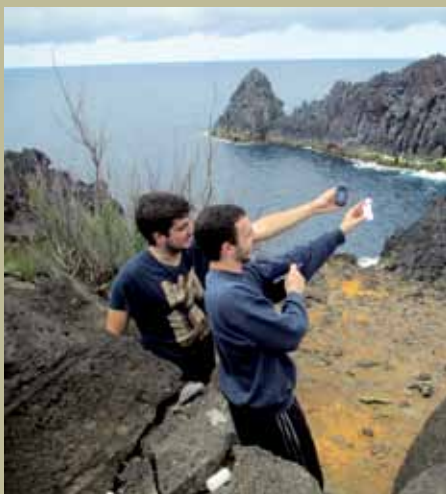
Central Catalonia Geopark



Geo-Naturpark Bergstrasse Odenwald



Geo Mon



Azores Geopark



Cabo de Gata - Nijar National Park



Basque Coast Geopark

Week 2014

new ways of promoting our heritage



Reserve Geologique de Haute- Provence



Sierra Norte de Sevilla Natural Park



Chablais Geopark



Arouca Geopark



Apuan Alps Geopark

Every European Geopark staff member knows that, at first glance, rocks and landforms are silent and immobile. One of our most important missions is to get them to 'talk' because they carry really interesting stories about our past, which is dynamic and full of surprising twists. Since geoparks are not just for geologists, we must translate and share the complicated language of Earth science with visitors of all ages with varying degrees of geological knowledge – this is sometimes a greater challenge than publishing an article in a scientific magazine.

Guided geotours, oral presentations for the general public, school contests and opening new visitor centres, of course, are very important events in European Geoparks Week which occurs annually during late May and early June. However, there are also other ways to celebrate and communicate the links between geological and intangible heritage, local communities and their traditions.

The European Geoparks Week 2014



Hondsrug Geopark



Idrija Geopark



Sierras Subbeticas Natural Park



Sobrarbe Geopark



Maestrazgo Cultural Park



Villuercas_Geopark



Rokua Geopark



Vulkaneifel Geopark



Geopark Eisenwurzen, Austria



Shetlands Geopark



Karawanke Karawanken



Geopark Naturtejo da Meseta Meridional



Psiloritis Natural Park



Massif des Bauges Geopark



Chelmos - Vouraikos Geopark

High quality and exciting outdoor sports activities are becoming popular. Some coastal geoparks offered 'geo-kayaking' when, thanks to dedicated guides, visitors could also learn about the geology of the route along a coastline. Other geoparks organized special programmes for cyclists who, besides cycling, visited iconic geosites. New snorkel trails, also advertised in 2014, required the creation of interpretive information for underwater enthusiasts.

Savour the culinary delights of Geoparks! Families had fun making ammonite shortbread, conglomerate buns and chocolate volcanoes, at the same time the keen 'bakers' were familiarized with key geological principles. Clearing of a blocked cave provided a memorable experience for volunteers and, after finishing the hard work, traditional food products were tasted from other European Geoparks. 'Enjology!' was the special motto of Italian geoparks in 2014: it was an excellent means of highlighting the relationship between geodiversity and typical agri-food products in their regions.

All of these unique experiences help to make local people familiar with geoparks and to be proud of living in a European Geopark. The European Geoparks organized approximately 900 events and welcomed nearly 80,000 people during the EGN Week 2014. Their on-line presence on the web and social media plays an increasingly important role but still more than 160,000 printed programme flyers were published around our continent.

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The peony – the flower which creates a natural, cultural and artistic bridge between continents

The Intercultural Peony Project

A flower as a natural and cultural bridge between continents

Peony – the flower, which grows nowadays mainly in botanical and private gardens – has a fascinating place in the medicinal history of China and Germany.

In both countries the peony was used in herbal medicine. The 8th century “Lorsch Pharmacopeia” (included in UNESCO’s Memory of the World Register), the oldest collection of classical remedies used in the early Middle Ages in Europe, refers to the medicinal use of the peony. The Benedictine Monks of Lorsch Abbey, now a World Heritage Site, introduced this plant from southern Europe, and this is the reason why the peony is also called the “Benedictine rose”. The City of Lorsch celebrated its connection with the history of the peony by creating an international peony garden and by naming a new variety, *Paeonia lactiflora laureshamensis* after the Lorsch Abbey.

In China, the peony, which is still used as important ingredient in herbal medicine, has inspired artists and poets for more than 3000 years. Known as the “emperor of flowers” the peony represents a symbol for prosperity and nobility.

Based on this shared background, the Global Geopark Bergstrasse-Odenwald and the City of Lorsch have developed an international, intercultural project in partnership with the Global Geopark Mt. Lushan (PR China) and the WHS Lorsch Abbey (Germany). The project consists of four phases: 1 an arts exhibition; 2 to establish peony gardens in Lorsch and Mt. Lushan; 3 involving re-

search and exchanging peonies; 4 the development of thematic touristic travel packages.

The first phase, the peony arts exhibition, was implemented in the Museum Centre of the City of Lorsch, from June 1st to August 17th, 2014. The exhibition included 70 paintings of peonys and peony calligraphy poems by 33 contemporary artists. Examples of poetry, calligraphy, ink drawings and paintings collected and selected by Mt Lushan Geopark were transferred to the Museum Centre of the city of Lorsch and the WHS headquarters.

The exhibition was opened on the 1st of June in a ceremony attended by representatives from the Federal Government of Hessen, the Global Geopark Mt. Lushan and the Chinese Council for Culture.

The three-months long exhibition provided thousands of visitors with unforgettable insights into traditional and contemporary Chinese arts as well as the peony’s role as a bridge between continents.

The project will continue in 2015 with the implementation of an international peony garden in the botanical garden of Global Geopark Mt. Lushan.

The Peony Exhibition - 70 paintings and calligraphy created by 33 Chinese artists were exhibited in the Global Geopark Bergstrasse-Odenwald

Zhu Dong, Director of Global Geopark Mt. Lushan signing the exhibition guest book during the opening ceremony

Jutta Weber
(Global Geopark Bergstrasse-Odenwald),
Gabi Dewald
(City of Lorsch), - Germany,
Zhu DongE
(Global Geopark Mt. Lushan) – China



The meeting between the project team and Tianzhushan primary school's Board of Directors to prepare the Geopark's plan of annual activities.



Naturtejo and Tianzhushan Global Geoparks in an international project for interpreting geological heritage

An international project coordinated by the China University of Geosciences in Beijing is being developed by Tianzhushan Global Geopark. The aim of the project is to refresh the interpretation of the remarkable geological heritage of Tianzhushan; its Palaeocene fossil sites, the amazing areas of picturesque granite landforms, and the educational ultrahigh-pressure metamorphism routes. It also includes improving signage, local museums and cultural sites, visitor centres, local schools and family-run hotels. The Tianzhushan Project involves the innovative design of about 150 information panels, geo-educational exhibitions, mascots, a website and merchandising, the training of tour guides, editing popular science texts, the production of a new promotional video and the design of a new geopark guidebook, leaflets and a tourist map in five different languages to cater for international visitors to Tianzhushan Geopark.

An internationally renowned team of experts is taking part in this project to guarantee the quality of the scientific information for the educational provision for the general public and schools. The team includes geologists, e.g. Professor Kuiyuan Tao from the Nanjing Institute of Geology and Minerals, geomorphologists, e.g. professors Zhiju Cui and Youyu Xie from Peking University and the China Academy of Science respectively, experts in geotourism such as Dr. Kejian Xu from China University of Geosciences and Carlos Neto de Carvalho from Naturtejo Global Geopark, Portugal, and Zhihua Li, the senior editor of Chinese National Geographic. The quality of translations in foreign languages is supervised by Dr. Joseph Finch from the University of Bath in England and Professor Bangli Liu from Zhengzhou University. The involvement of experts in tourism management and planning, graphic and cartoon design, park design, art layout, video and photography exemplifies the project's commitment

Bamboo rafting at Baimatan, a very popular activity for 400,000 visitors annually, revives the river boatmen's 300 year old culture.



to best practice.

Naturtejo Global Geopark was invited to take part in the project under the official cooperation agreement signed last July. This sister partnership fosters an active exchange of experiences in the technical fields of management, tourism and business relationship. Carlos Neto de Carvalho, scientific coordinator of the Portuguese Geopark, was invited to contribute to the group of experts that visited and worked in the territory for one week under the coordination of Guosheng Yu, manager of Tianzhushan Global Geopark. The working group also involved the Geopark's staff and board of directors in discussions with the local inhabitants and businessmen responsible for the scenic areas and museums, cultural sites, local schools and eco-farms, family-run hotels and restaurants, local gift shops and tourism companies.

The multidisciplinary team will work intensively in the field and in their respective institutions in China and Europe for the next six months.

The project team visits Mr. Ge's family-run hotel and eco-farm at Tianzhushan.

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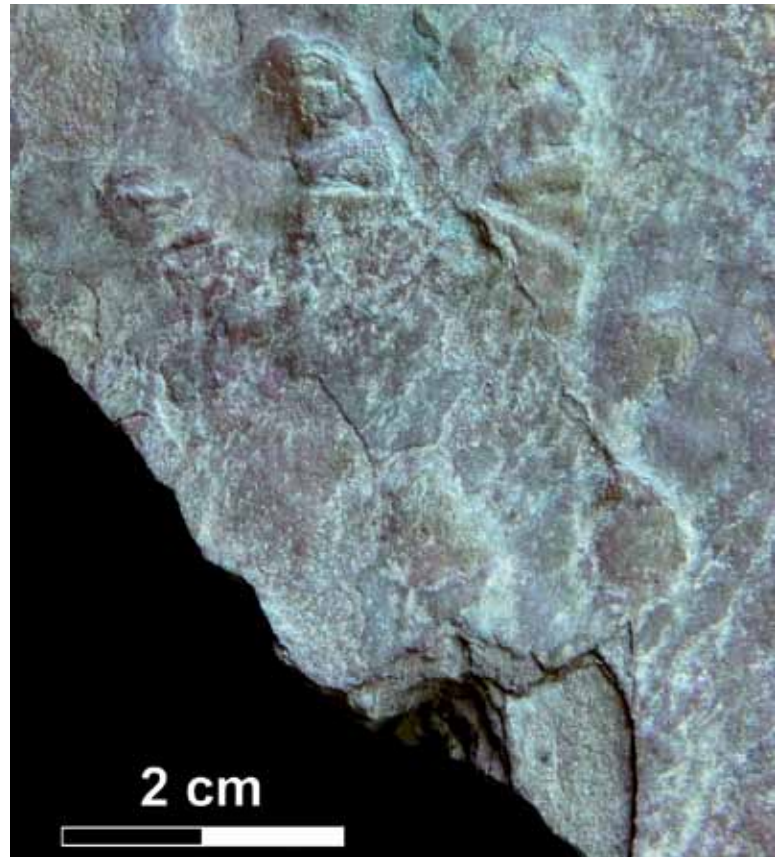
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Pre-dinosaur tetrapod footprints as a new asset of the Geopark Carnic Alps

The rich fossil heritage of the Geopark Carnic Alps has recently been expanded by a new asset — the oldest traces of land-dwelling vertebrates in Austria. The first and hitherto only specimen with Palaeozoic tetrapod tracks from Austria was discovered near Kötschach-Mauthen in 1979. Compared with the *ichnotaxon* *Ichniotherium cottae*, these tracks argued for an Early Permian age for the footprint-bearing red-beds of the discovery site. The latter belong to the Laas Formation, a thick succession of volcanoclastic-sedimentary rocks that underlays the calcareous Triassic to locally Cretaceous sequence of the Gailtal Alps.

According to more recent studies, the *ichnogenus* *Ichniotherium* refers to trackmakers of the clade Diadectomorpha. It represents a group of Late Carboniferous and Early Permian reptile-like amphibians including some of the earliest herbivorous tetrapods on Earth. Diadectomorph fossil remains are known from Canada, the Czech Republic, Germany, Great Britain, Morocco, Poland and the US. The Kötschach-Mauthen specimen is the only potential record of this important and wide-spread group of terrestrial tetrapods in the whole of the Alps.

In order to confirm the previous footprint report, Voigt and Marchetti explored the Geopark Carnic Alps in 2013. A new site with reddish sand-, silt- and claystones of the Laas Formation yielded footprints of two more tetrapod *ichnotaxa*, *Amphisauropus* Haubold, 1970 and *Dromopus* Marsh, 1894. Potential producers of these trace fossils are Seymouriamorpha, i.e. ca. 50 cm long reptile-like amphibians related to the Diadectomorpha, and early diapsids of similar size. The trace-fossil bearing sediments are associated with invertebrate traces, root trac-



es, desiccation cracks, ripple marks and microbially induced sedimentary structures characterizing floodplain fines within a thick series of alluvial fan deposits. The new footprint material supports the supposed Early Permian age of the Laas Formation and its interpretation as deposits of a continental basin almost 300 million years ago.

Amphisauropus tracks from the Geopark Carnic Alps.

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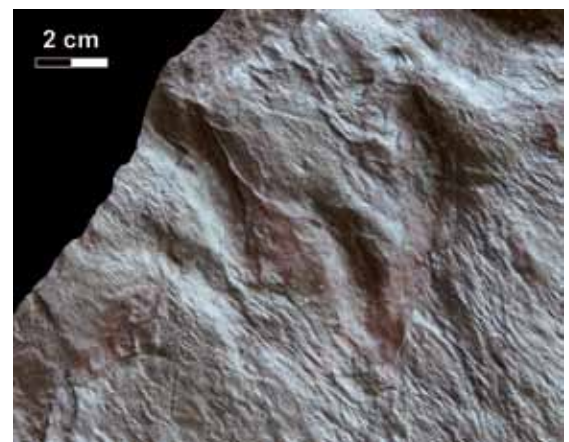
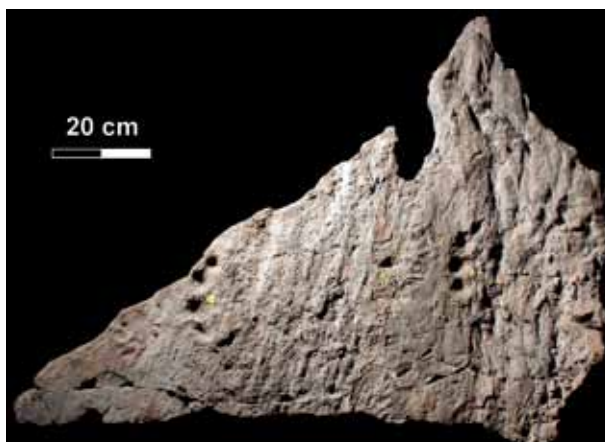
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Dromopus tracks from the Geopark Carnic Alps.



Kötschach-Mauthen specimen with tracks previously attributed to cf.



Itzurun Beach and the Zumaia section contain 14 geosites of International stratigraphical, palaeontological and geomorphological interest.

Inventory of Geosites: A Basic Tool for Managing Geological Heritage in the Basque Coast Geopark.

Geology, and more specifically the management of geological heritage, forms the bedrock of any geopark project. Consequently an inventory of geosites provides a basic management tool which enables the effective planning of scientific, geo-conservation, educational and geo-tourism initiatives. An inventory is much more than a simple list of places of geological interest. It should involve a selection of sites that together represent the geology of the local area, and it should also include a quantitative analysis of the different parameters that will help plan their management in the future.

The Basque Coast Geopark has undertaken an inventory of 54 geosites, using the following methodology.

1. Meeting of a committee consisting of 10 experts in different geological disciplines. Each expert proposed 10 sites of interest in relation to his or her field of expertise.
2. Selection of a list of sites. The most important parameter borne in mind during the selection of sites was that they should be representative of all the current and past geological processes recorded in the rocks. This process resulted in the selection of a definitive list of 54 sites.
3. Design of an in-house assessment sheet adapted to the specific characteristics of the geopark and compatible with other geopark assessments in Spain, as well as with the GEOSITES project (UNESCO-IUGS). Each sheet contains an initial descriptive section, followed by a second quantitative assessment section focusing on the following issues: 1) scientific value 2) potential for public use and 3) vulnerability.
4. Fieldwork and completion of the sheets. Each sheet includes a space at the end of the page for recommendations regarding geo-conservation

and initiatives designed to maximise the value attached to each geosite.

5. Cross-referencing of data and compilation of comparative graphs and maps to carry out a diagnosis of the Geopark's geological heritage. The aim is to identify the location of the geosites and their significance.
6. Conclusions and management proposals: definition of priority research areas in less studied disciplines; regulatory proposals for unprotected geosites; conservation proposals for more vulnerable geosites and proposals for infrastructures and educational material to improve the potential for public use.

More information is available at www.geoparkea.com

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Geological map and distribution of the geosites in the Basque Coast Global Geopark (Photo Iñigo Aizpuru)





Kim Rothemel in an overgrown gravel-quarry.

Geotope protection in the GeoPark Swabian Alb

In contrast to the biosphere, the basis of life, the rocks, are still neglected, even within the politics of environmental protection. The existence and weathering of rocks prior to the advent of plants and animals is one of the main factors in soil formation, a significant component for surface water retention. With a concept of geotope management, and based on the geotope register of the Authority of Geology, Mining and Raw Materials in Freiburg (LGRB), a detailed compilation of the most important geotopes in the Swabian Alb, their condition, their need for protection and preservation was initiated in August 2014. The GeoPark also aims to develop a network with scientific institutions involving the mapping of geotopes by university students.

A polished example of Böttinger Marble.

During the summer of 2014, 420 geotopes from 1900 geotopes in 10 counties were

selected. With the aid of GPS, the first 80 geotopes in three counties and in Ulm were mapped by Kim Rothemel from Würzburg University. The new geotope data were included in the LGRB database and documented by photographs. Some geotopes are in a bad condition, especially quarries often become overgrown. We hope, that the detailed mapping will make the the geotopes more visible and open to the public. Each visitor to the Swabian Alb should be able to experience the beauty of these sites.

In addition to mapping, on the 21st September the GeoPark celebrated the “Day of the Geotope” in the Swabian Alb. Every 3rd Sunday in September this day is celebrated in Germany, nationwide. The GeoPark designated the Böttinger Marble, as one of the most beautiful geological phenomena in the Swabian Alb.

Despite the inclement weather, approximately 500 visitors found their way to the quarry of the Böttinger Marble. Visitors enjoyed the guided tours and the information on the palaeontology of the marble. The hydrothermal rock is 10 million years old and originated from the precipitation of calcium carbonate in hot springs associated with the Swabian volcano. It is both an important geotope and a significant cultural asset.



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Taking soil profiles in Trautzberg Maar in cooperation with Trier University

Recovery of an ancient maar lake in Vulkaneifel Geopark

Vulkaneifel has a strong volcanic legacy consisting of maars and cinder cones. In the 1980s, geomagnetic research was carried out throughout the Vulkaneifel region which proved the occurrence of a maar in the depression close to Trautzberg.

Soil profiles in cores recovered from Trautzberg Maar revealed an interbedded sequence of organic and clay layers indicative of deposition in a lake at a time when Trautzberg Maar was probably filled with water.

This conclusion is substantiated by the historical maps of Tranchot and Müffling from 1810/1811, who mapped the Eifel region for the French Emperor Napoleon. The maps from 1811 record the occurrence of a wetland at the Trautzberg Maar site.

Following World War 2, the Trautzberg Maar was drained as part of an agricultural land reclamation programme in the early 1960s and since that time was used for pasture.

In recent years, the local community decided to restore their maar. After the ownership



Sediments in Trautzberg Maar: alternating layers of clay and peat.

situation was clarified, planning of the restoration began as a collaborative project with the Vulkaneifel Nature Park and Geopark. The project aimed to reclaim the original wetland in an ecologically sound way without impacting heavily on the environment by focussing on capping the old drainage system and building a small dam as an overflow.

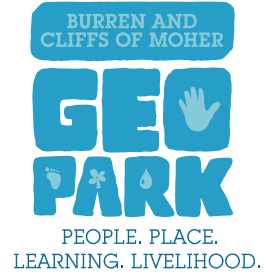
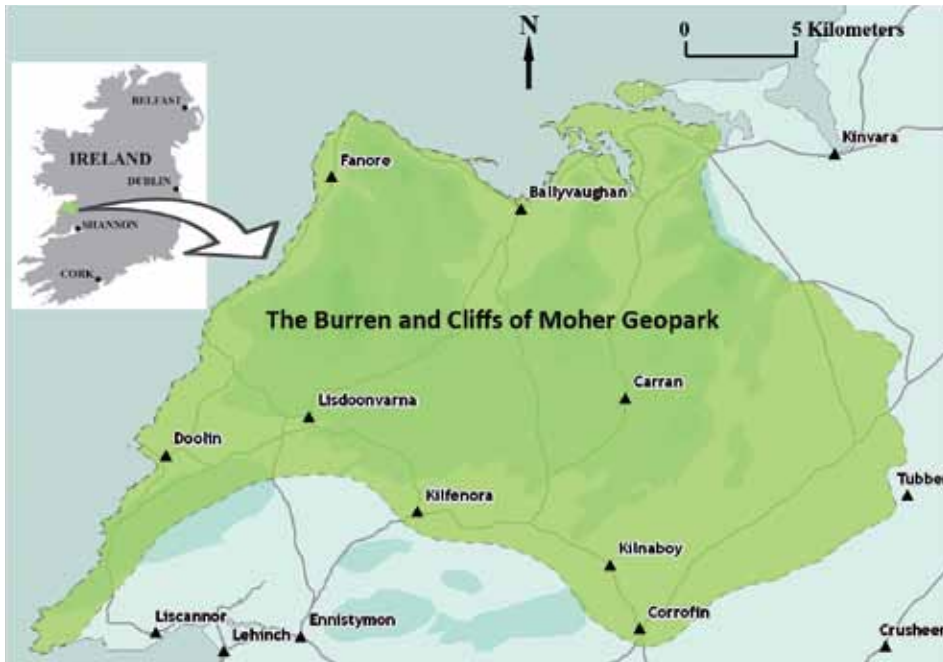
The reclamation of the wetland in the maar is important because it contributes to the geological heritage of Vulkaneifel. Vulkaneifel is also an important resting place for migrating birds. Therefore the creation of additional wetlands has been requested by biologists. Biologists are currently monitoring the changes in the plant communities associated with the developing wetland at Trautzberg Maar.

The restored Trautzberg Maar has recently been made accessible by a new hiking trail and will be another highlight for nature- and geotourism in the southern part of the Vulkaneifel Nature Park and Geopark.

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Trautzberg Maar with small lake only weeks after damming the drainage system.





The location of the Burren and Cliffs of Moher Geopark.

A community-initiated groundwater tracing project

in the Burren and Cliffs of Moher Geopark, County Clare, Ireland.

The Burren is one of the best examples of a karst limestone landscape in the world. Groundwater flow patterns are complex and much of the groundwater flows in underground conduits at high flow rates. The groundwater of the Burren has been classified as ‘extremely vulnerable’ by the Geological Survey of Ireland. Over the years cavers have contributed a huge amount of information about caves and groundwater flow in the Burren. Much of this information has not been published in peer-reviewed journals and in some cases there is no known data to verify flow paths.

An example of groundwater flow through a cave in the Geopark.



In order to fill in a gap in our understanding about the flow path of waters draining the Carran Turlough at Castletown sink, the Clare Caving Club contacted the Burren and Cliffs of Moher Geopark for support for a dye tracing project. The assumed emergence, the Fergus River Springs, ultimately feeds into the public drinking water supply of the town of Ennis (pop. 25,000).

This project provides the Burren and Cliffs of Moher Geopark with the opportunity to facilitate a process whereby several public bodies, a local secondary school and the caving club can work together on a project which has scientific, public health and educational value, and ensures that the learning outcomes of the project will be available to all.

Project partners and their



The Carran Turlough.

roles in the project are:

1. The Geological Survey of Ireland (Groundwater Division) supplied the dye for tracing.
2. Clare County Council (through Irish Water) supplied 150 water sample bottles.
3. Clare Caving Club initiated the project, and used the expertise of its members to run the dye trace, collect and analyse water samples.
4. Lisdoonvarna Secondary School students participate in water sampling and collating information.

The outcomes of this project will be:

- a) An education programme involving primary and secondary school children
- b) A public exhibition on groundwater at Lisdoonvarna Spa Wells

Following a dry summer, the rains have come and we await the optimum conditions for dye release and to initiate the investigation.

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The Kraus Cave of Gams.

Spectacular Geotopes in Geopark Eisenwurzen

This year saw two important scientific meetings at the Eisenwurzen Nature and Geopark. From 22 to 25 May the Working Group of the German Society of Earth Sciences on Geotopes met at St. Gallen. Some 70 scientists from Germany, Switzerland and Austria presented their research results and attended the field trips. From 9 to 12 October the Association of Austrian Speleologists held its annual conference at the “Geovillage” of Gams. The famous local caves are also spectacular geotopes, and the GeoTrail of Gams – recently awarded the title of Austrian “Thematic Trail of the Year 2014” - attracted 140 participants.

The conference commemorated the 180th anniversary of the birthday of Franz Kraus (1834 - 1897), a leader of Austrian speleological research in the late 19th century. Spending the summers at Gams, he developed, together with the local citizens, a cave as early as 1882 as a tourist attraction. It is one of the extremely rare gypsum caves and the largest of its kind in Central Europe. Spectacular solution patterns, widespread deposits of white crystalline gypsum and dripstones contribute to the cave’s spectacular

appearance. The Kraus Cave, as it is now named, was the first cave in the world to use electric lighting. The cave is a protected site and some 5000 visitors take the opportunity to visit it each year.

Owing to its fragile climate the Beilstein Ice Cave is accessible only to a small number of visitors. Located in a high forest, this cave is the only known ice cave in the Eastern Alps which is situated below the tree line. The three meter high ice columns rising from the 14 meter thick ice floor make a visit to the cave a real adventure.

In addition, the Arzberg Cave in which the discovery of prehistoric tools was described in Magazine 11, has developed a touristic programme from spring 2014.

Altogether, there are as many as 144 registered caves in the Eisenwurzen. Like the spectacular Bergmandlloch Cave with a total length of 800 m, most of them are not accessible to the public.

The Beilstein Ice Cave of Gams.

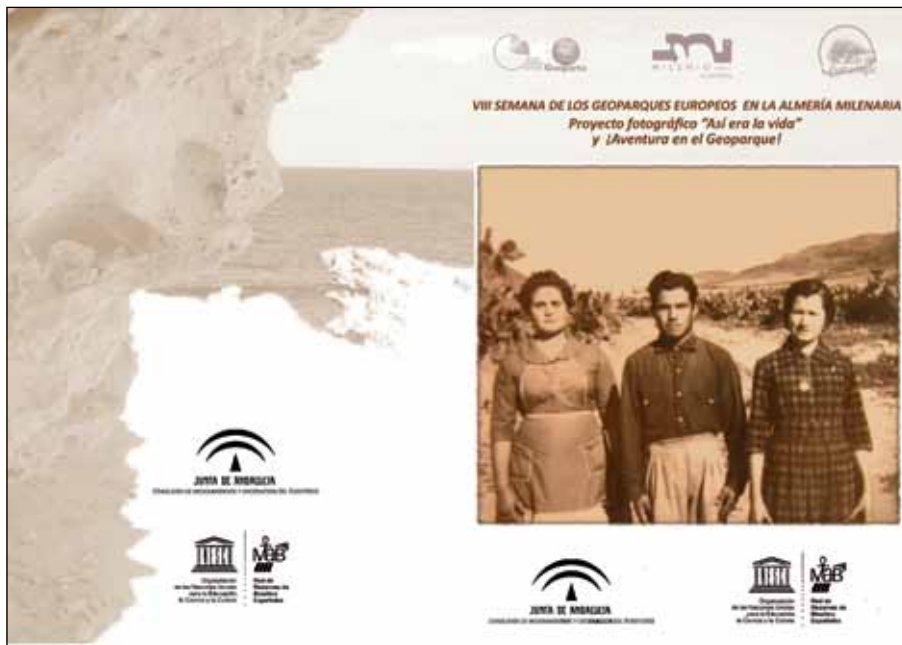


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The Bergmandlloch Cave of Gams.





Cabo de Gata-Níjar
EGN Week
2014.

“That was life” - Así era la vida

An intangible heritage project in Cabo de Gata Níjar Geopark

Presented in Cabo de Gata-Níjar 2014 EGN week, That was Life (Así era la vida) is a photographic project promoted by the Geopark and produced by Carmen Fernández, a Geopark's enterprise collaborator. The project developed from the need to collect and preserve the territory's scattered past, by recording the oral history and the scant photographic evidence available. As a result of this project a hundred photographs and sound recordings have already been collected and will form the basis for a more extensive programme, including exhibitions and local activities, guided visits, cultural events and publications.

The extremely arid climate, relatively poor soils and isolation explain the late and scattered occupation of this territory. This background provides a scenario of mixed, loosely connected communities and, in many cases, with problems in finding a common identity.

Also, this area has been populated sporadically, and even nowadays its population density is remarkably low. The following stages can be recognized in the history of the occupation of the Geopark's territory:

- XVIII Century: Development of a coastal defensive system against North African pirates, which hampered the establishment of stable populations.
- XIX-XX Century: A period of transhumance in which the use of pastures during the winter

A photograph of traditional fishermen.



Presentation of the project at the House of the Volcanoes.

season contributed to the development of a network of water storage systems and a new phase of occupation.

- Mid XX Century: Neo-colonization led to the establishment of towns, fostered by the dictatorship, to develop rural abandoned areas through agriculture and mining. Mine closures resulted in depopulation.
- Late XX Century: The development of tourism and the appreciation of the cultural and environmental values of the region led to the last influx of new inhabitants.

Therefore, one of the main objectives at Cabo de Gata-Níjar Global Geopark is to develop bottom-up activities that allow its inhabitants to reappropriate the values of the territory's heritage, as stated in the EGN Charter. Thanks to this project, the Geopark wants to give the new and former inhabitants a common sense of wonder about the history of the Geopark and to recover the past for future generations.

**Pablo Rivas Palomo,
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Parque Natural
Sierra Norte de Sevilla

Students from a school in the Geopark at the opening day of the exhibition.



The new interpretive exhibition at the Information Centre of Cerro del Hierro Natural Monument, Sierra Norte de Sevilla Geopark

The new interpretive exhibition was installed at the Information Centre of Cerro del Hierro Natural Monument in the spring of 2104.

Several panels, installed in the three rooms used for the exhibition, show, in a didactic and attractive way, the features of the Natural Monument including: how the Cerro del Hierro (iron hill) was formed; the nature of the natural and cultural landscape; the unique flora and fauna of this location; the history of mining, with special emphasis on the most recent activity; and the current public activities in the area.

A small model shows the most significant elements of mining in the last century and the characteristic karstic morphology of this region. There is also an exhibition of the most common rocks and minerals from the Cerro del Hierro.

The Natural Areas Network of Andalusia and some details of the Sierra Norte de Sevilla region are described in a specific panel. Another panel focuses on descriptions of Geoparks in the European Geoparks Network, the Global Geoparks

Room with panels about the Natural Monument, model and an exhibition of rocks and minerals



Network, the Sierra Norte de Sevilla Geopark, and the current Spanish Geoparks.

This exhibition is completed by two panels on the outside of the building, explaining the biodiversity and geodiversity of the Geopark and natural resources traditionally exploited in this region.

The Cerro del Hierro Natural Monument is a very special geological, natural and ethnographic location in the Sierra Norte de Sevilla Geopark, and is one of the most visited sites in Seville. The Cerro del Hierro is a large area of abandoned iron mines, which expose a thick sequence of marine limestones of Lower Cambrian age, which were subjected to karstic processes immediately after sedimentation in a tropical climate. The Cambrian karst topography involved the formation of large sinkholes, limestone pavements, pinnacles and title stuffed with clay rich in iron oxides.

Panoramic view of a section of the Cerro del Hierro Natural Monument.

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TERRA. vita

NATURPARK
NÖRDLICHER TEUTOBURGER
WALD, WIEHENGEBIRGE,
OSNABRÜCKER LAND E.V.

The sieving
station at
the Shark
Information
Centre.

Ice age sharks ?

A Shark Information Centre in an unusual location

Examples
of the fossil
teeth of
Carcharocles
sp, a shark
which swam
in the tropical
Tertiary sea.

The northern part of the TERRA.vita Geopark is characterized by glacial sediments. The Ankum-Bippen Hills, an easily visible structure located some 20 kilometers north of Osnabrück, were pushed up by glaciers to form a typical end moraine. What type of fossils would you expect to find here? Tusks of Mammoths probably, bones of cave bears or the remains of early humans of course. And indeed – the typical remains of early

life in the Ice Age have been found at several sites in these hills. But there is one special place where fossil hunters discovered something that you definitely would not expect to find: the teeth of giant sharks

Sharks swimming between ice floes in glacial lakes? A really strange notion. However, geologists soon found an explanation for this strange Geosite. When the glaciers moved across the northern German plains during the Second Ice Age, they scooped up and squeezed older Tertiary sediments, like scales, between the glacial deposits. These Tertiary sediments were laid down in a former tropical sea, where sharks of various sizes used to live.

The fossil site, under protection since the 1970s, was systematically explored by a scientist, contracted by TERRA.vita in 2011. The decision was taken to open an Information Centre on sharks as part of a regional Environmental Education Centre in the village of Bippen. The concept of the centre is based on indoor and outdoor sections. The indoor component contains six multimedia stations that can be passed through by visitors in single-file to gain information on the evolution of sharks, their behaviour, their diet, their environment and their method of reproduction. Outdoors, visitors will have the chance to sieve original material from the fossil site that was collected during the research work. Teeth that are found will be identified and collected by experts, while the visitors receive a cast model of a shark tooth for free. The centre - called "Haitec in der Urzeit" in German - will be opened in spring 2015.



Timo Kluttig

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The path for expert hikers along South Pisanino ridge follows the highest peak of the Apuan Alps (1947 m).

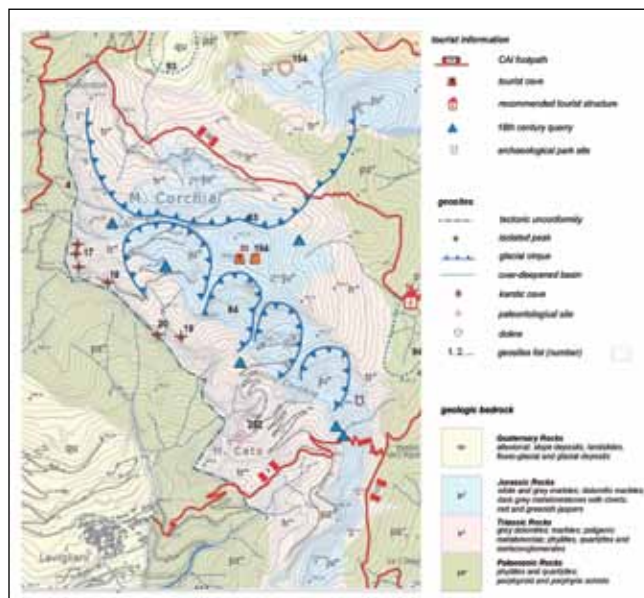


The Hiking and Geotourist Map of the Apuan Alps: A new tool to get to know the Geopark

Every year thousands of hikers walk and climb in the Apuan Alps Geopark. In order to introduce the large numbers of visitors to its geological heritage, the Geopark has produced a new Hiking and Geotourist Map enabling tourists to discover the scientific and environmental significance of the geological and geomorphological features while trekking in the Apuan Alps.

The Map, which includes two double printed sheets on a scale of 1:20,000, with keys in two languages (Italian and English), was derived from a GIS project combining geological, hiking and tourist information. The information provided includes the main roads and the very extensive network of trails represented by more than 600 km of footpaths managed by the Alpine Club of Italy. In order to disseminate scientifically correct information to a non-specialist audience and to workers in the territory, the geological features have been simplified following two main parameters: The age of the rocks exposed on the surface (Paleozoic Era and Periods for rocks of post-Paleozoic age) and their basic classification (e.g. sedimentary rocks and metamorphic rocks). The 253 sites included in the Geopark's Inventory of Geosites, have also been highlighted in the key of the simplified geological map. They are categorized by clear symbols (points, lines, areas) which facilitate an immediate understanding of the nature of each geological site. In this way the features in the landscape, which are more easily recognizable in

A trail marker along a path in the Apuan Alps.



the field, are emphasized.

The tourist facilities (including mountain huts, museums, visitor centres and information points) are additional components of the Hiking and Geotourist Map of the Apuan Alps. Facilities certified by the Park Authority for their eco-friendly choices, are highlighted with a special label.

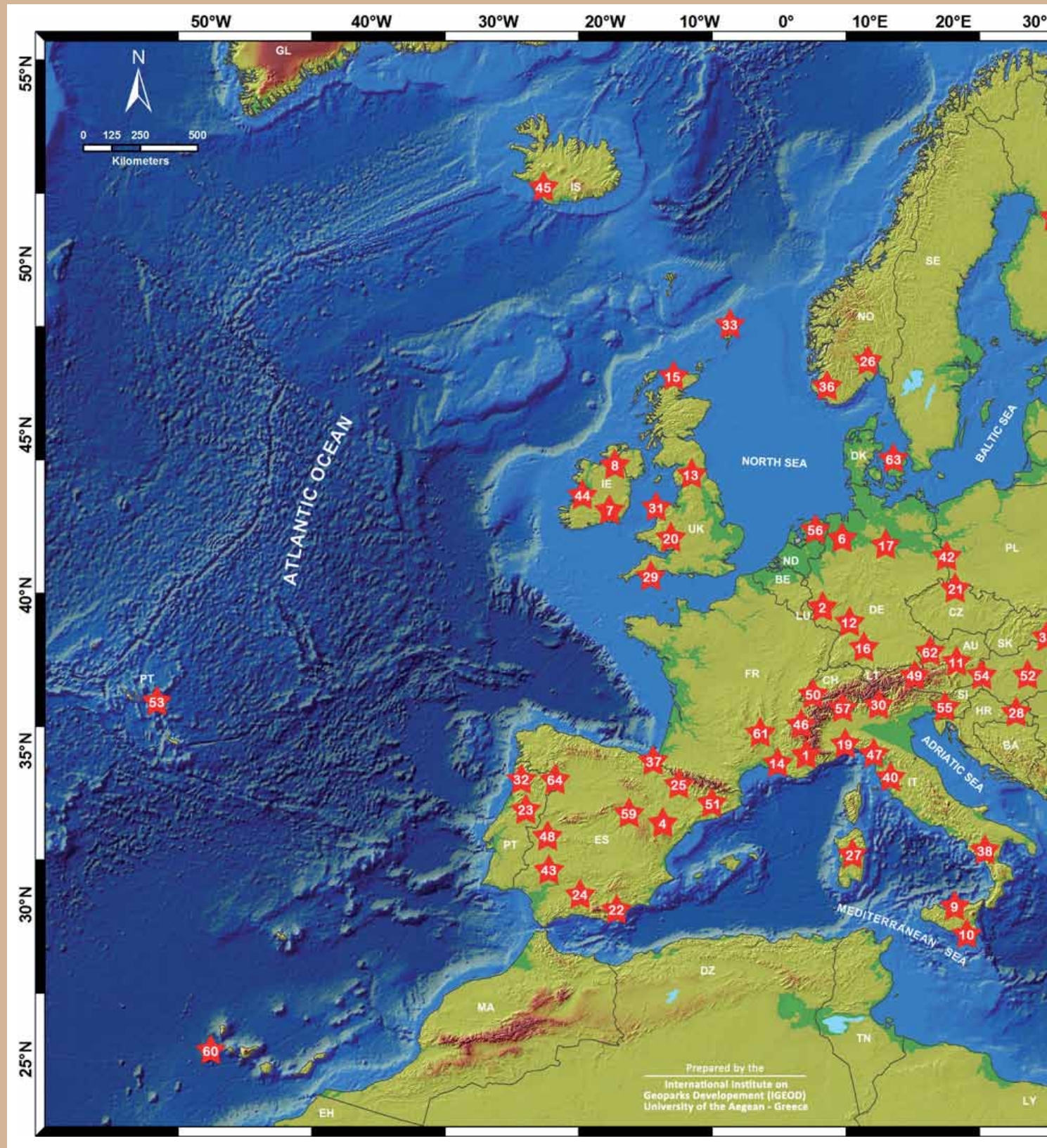
The Map is available at an affordable price through the e-commerce website <http://www.shop.parcapuane.it>.

Future developments will result in a free web map allowing interactive consultation, the selection of customized itineraries and details through the activation of additional hyperlinks.

An extract from the Hiking and Geotourist Map of the Apuan Alps Geopark

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The European Geoparks Network



The Network consists of 64 Geoparks in 22 European countries. For more information, visit www.europeangeoparks.org

network today



countries (September 2014)

1. Réserve Géologique de Haute Provence	FRANCE
2. Vulkaneifel European Geopark	GERMANY
3. Lesvos Geopark	GREECE
4. Maestrazgo Cultural Park	Aragon, SPAIN
5. Psiloritis Nature Park	GREECE
6. TERRA.vita Nature Park	GERMANY
7. Copper Coast Geopark	IRELAND
8. Marble Arch Caves European Geopark	NORTHERN IRELAND, UK
9. Madonie Geopark	ITALY
10. Rocca di Cerere	ITALY
11. Nature Park Steirische Eisenwurzten	AUSTRIA
12. Nature Park Bergstrasse Odenwald	GERMANY
13. North Pennines AONB	ENGLAND, UK
14. Park Naturel Régional du Luberon	FRANCE
15. North West Highlands	SCOTLAND, UK
16. Geopark Swabian Albs	GERMANY
17. Geopark Harz. Braunschweiger Land. Ostfalen	GERMANY
18. Hateg Country Dinosaurs Geopark	ROMANIA
19. Beigua Geopark	ITALY
20. Fforest Fawr Geopark	WALES, UK
21. Bohemian Paradise Geopark	CZECH REPUBLIC
22. Cabo de Gata - Nijar Nature Park	Andalucia, SPAIN
23. Naturtejo Geopark	PORTUGAL
24. Sierras Subbeticas Nature Park	Andalucia, SPAIN
25. Sobrarbe Geopark	Aragon, SPAIN
26. Gea Norvegica	NORWAY
27. Geological, Mining Park of Sardinia	ITALY
28. Papuk Geopark	CROATIA
29. English Riviera Geopark	ENGLAND, UK
30. Adamello - Brenta Nature Park	ITALY
31. Geo Mon	WALES, UK
32. Arouca Geopark	PORTUGAL
33. Shetlands	SCOTLAND, UK
34. Chelmos Vouraikos	GREECE
35. Novohrad - Nograd Geopark	HUNGARY and SLOVAKIA
36. Magma Geopark	NORWAY
37. Basque Coast Geopark, Pais Vasco	SPAIN
38. Parco Nazionale del Cilento e Vallo di Diano, Campania	ITALY
39. Rokua Geopark	FINLAND
40. Tuscan Mining Park	ITALY
41. Vikos - Aaos Geopark	GREECE
42. Muskau Arch Geopark	Germany/Poland
43. Sierra Norte de Sevilla Natural Park,	Andalucia ,Spain
44. Burren and Cliffs of Moher Geopark	Republic of Ireland
45. Katla Geopark	Iceland
46. Massif du Bauge Geopark	France
47. Apuan Alps Geopark	Italy
48. Villuercaas-Ibores-Jara Geopark	Spain
49. Carnic Alps Geopark	Austria
50. Chablais Geopark	France
51. Central Catalunya Geopark	Spain
52. Bakony-Balaton Geopark	Hungary
53. Azores Geopark	Portugal
54. Karavanke/Karawanken	Slovenia & Austria
55. Idria Geopark	Slovenia
56. Hondsrug Geopark	Netherlands
57. Sesia - Val Grande Geopark	Italy
58. Kula Geopark	Turkey
59. Molina Alto Tajo	Spain
60. El Hierro	Spain
61. Monts d'Ardèche	France
62. Ertz der Alpen	Austria
63. Odsherred	Denmark
64. Terras de Cavaleiros	Portugal



A Nordic walking trail in Beigua Geopark.

Developing outdoor sports to enhance the geological heritage in Beigua Geopark

The Beigua Geopark is located in Liguria Department, in the north western part of Italy. As one of the most interesting areas in this region it is renowned for its outstanding natural history, the beauty of its landscape and for its geology which is crucial for understanding the geological history of Italy, especially the evolution of the Alps and the Apennines chains.

Highlights of the Beigua Geopark include an extensive area of ophiolites with evidence of an ancient Jurassic ocean, impressive geomorphological features testifying to past glaciers, precious mineralogical sites, and fascinating well-preserved fossils. Besides its geological heritage, Beigua has the richest biodiversity in Liguria, managed through three Sites of Community Importance and one Special Protection Area.

Canyoning in Beigua Geopark.



For some years the Beigua Geopark has launched several initiatives in the field of sports and outdoor tourism strongly supported by many organizations and local stakeholders. The main goal is not only to develop more effective actions to support local development through the promotion of tourism, but also to take advantage of these activities to increase knowledge and raise public awareness of the geological heritage. For these reasons several trails have been equipped for sports such as nordic walking, canyoning orienteering, hiking, trail running, mountain biking, bouldering, climbing, horse-riding, diving and snorkeling along the coast. These routes are located in areas of great geological interest allowing visitors to enjoy the scenery and the di-



A mountain bike trail in Beigua Geopark.

verse geological features of the geopark. Visitor Centres, Information Points, interpretive panels and signboards also provide information about the geodiversity in the territory of Beigua. Based on a broad partnership, the Beigua Geopark and several local authorities and stakeholders approved a comprehensive agreement to promote local tourism through different outdoor sports initiatives. During 2014 a new project called Geo Beigua Experience has been launched. This project will organize and promote new mountain bike trails; these will involve the whole territory of the Geopark, affecting some of the most famous and attractive geological sites in Beigua. Other projects are under preparation such as the creation of a shared calendar of outdoor sports involving the geopark area throughout the year.

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Polished surface of an ammonite in the façade of an old house in Cabra.



Cabra, Jurassic City

A walk through the streets of Cabra (Cordoba, Spain) can become an unplanned trip back in time to the Jurassic Period, approximately 150 million years ago, to a time when this area was submerged beneath the ancient Sea of Tethys. This city represents a unique geological museum, in whose streets and buildings (altarpieces, cobblestones, fountains, columns, facades and surfaces), the remains of ancient sea floors are exposed with great clarity and beauty. The rocks of the city offer a window into the most distant past of the region.

In the construction of the city of Cabra, the red stone from Sierras Subbéticas has been used extensively. It consists of a Jurassic, ammonite-rich reddish limestone with a nodular appearance. This rock, known by geologists as the sedimentary facies ammonitico rosso, was deposited on sea mounts which rose above the sea floor. The use of raw stone provides three-dimensional examples of the fossils; polished limestone creates

Observing sections of ammonites and belemnites inside La Asunción Church.



sections through the fossils and in the case of ammonites provides spectacular examples of the internal morphology of their shells. Rock shapes and colours in this city are true works of natural art.

“Cabra, Jurassic City” is an urban geological trail developed in 2014 by the Geopark Sierras Subbéticas Management and the City Council of Cabra in collaboration with the University of Granada. It was planned on the occasion of the Geología (Geology-day), a weekend that annually promotes Geology in Spain. With regards to this event a booklet was published. It includes an introduction to the Geopark’s geological features, several sites of interest, some information about specimens of ammonites that can be observed during the walk and a map of the route. The trail, which can be easily completed on foot, ends with a visit to nearby quarries inside the Geopark. Here, the rocks that were used to construct the city of Cabra, can be observed in situ. Some of the quarries date from the Roman times. Nowadays red limestone is no longer exploited in the Geopark. Through this trail, the close links between geological heritage and cultural heritage are enhanced, where the remote past converted into stone has been carved by humans to create their own habitat, their own legacy, and their own culture.

A group visiting the quarries “El Acebuchal”, where large scale sedimentary structures of red nodular limestone can be observed in situ.

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Left: The access to the Buca delle Fate (medieval mine) opened along a vertical fracture.

Right: Tetrahedrite, an example of silver ore, from Montieri and fluorite a gangue mineral.

Searching for the medieval miners in the Tuscan Mining Geopark

The silver of Montieri

The Tuscan Mining Geopark is rich in silver and a number of sites, especially in the Montieri area, still contain visible evidence of mining. The Etruscans were the first people to mine silver in the area. Later, in the Middle Ages, the production of coinage by the Republic of Siena e Volterra, was supported mainly by silver extracted near Montieri. Montieri is a medieval village whose foundation and existence was due only to the occurrence of mineral deposits and mining activities linked to the extraction of silver. It is a small village situated on the north-eastern slope of the hill, where the foundry and the mint of the Bishops of Volterra were established.

Plan of the Buca delle Fate Mine.

The silver was extracted mainly from tetrahedrite

and to a lesser extent from galena. The associated gangue minerals consisted of calcite, fluorite and quartz.

Silver mining at Montieri is documented in numerous historical and archaeological records. The most intense period of mining occurred between the 11th and 14th century. In the 16th century, an attempt by Francis 1st, the Grand Duke of Tuscany, to reopen the mines proved unsuccessful. During the early years of the 19th century the mining entrepreneur Louis Porte founded a Company to revive the Tuscany copper and silver mines. Louis Porte's objective, like that of the Grand Duke and his successors, was to exploit parts of the silver vein which had not been discovered by the earlier miners. Unfortunately, this was not the case, the medieval miners had preceded them and the vein was worked out.

Discover the medieval miners in the geological mining trail

The Geopark has created a geological-mining trail where visitors can see medieval shafts and galleries, as well as mining works from the 16th and 19th centuries. Their particular characteristics, including their shape and location, have been interpreted through the careful geological study of the site and nature of the mineralization. This allows us to appreciate and understand the miners' knowledge concerning the mineralization and the reasons for their choices in organizing their working practices.

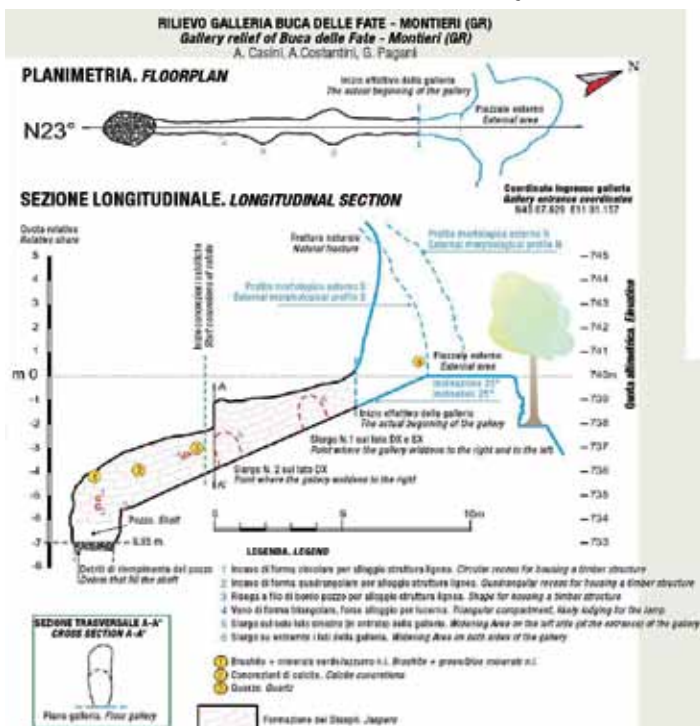
Dip into the history of medieval mining and receive a wonderful lesson in geology and mineralogy.

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A karren field consisting of bare karst



Geotrails to the karstic geofoms of Astraka Plateau in Vikos-Aoos Geopark

The Vikos-Aoos Geopark is characterized by numerous impressive karstic landforms, including deep gorges, steep mountain tops, caves, precipices, and rock shelters that attract both touristic and scientific interest. Astraka's plateau, situated in the heart of Mount Tymfi, is a significant area of the Geopark regarding karstic landforms. Here the development of the pronounced karstic relief resulted from the interaction between the climate, including high rainfall, frosts, frequent snowfalls and the prolonged snow cover on faulted limestone. These factors are an ideal combination for the creation of a strong karstic relief. Because it can be accessed only on foot, albeit with little difficulty, the Astraka's Plateau was selected as an area for the development of specific geotrails. An in-situ recording of geosites was organized; this included data from speleological expeditions, information provided by local people, scientific investigations by the Institute of Geology and Mineral Exploration and national and international publications.

Regarding the surface karst, a large number of features were generated creating an impressive landscape with solution grooves (Rinnenkarren,



Maanderkarren) that form by runoff on limestone surfaces at angles less than 20°, dolines, clints and limestone pavements. Extensive examples of bare karst surfaces occurring in areas of a few acres in size were also explored.

The bottom of the first shaft of "Tripa Ornio" cave (-584m.)

Subsurface karst forms, where surface water flows either partially or completely underground into the ground-water system, can be observed. Landforms consisting of closed depressions such as sinks, funnel or cylindrical shaped ponors and precipices are some of the features that define this site as a natural laboratory. Additionally, during in-situ data collection, several remnants of glacial landforms were identified, offering scope for a fascinating field of research in the future.

The most important geosites were connected through the creation of 9 geotrails within the Astraka Plateau area. The philosophy behind this work focuses on the development of interpretative tools for understanding the uniqueness of these geological monuments. The trails were recorded and subsequently presented in detailed maps, and related technical data were summarized in respective charts.

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The entrance to "Tripa Ligeris" cave (-386m.)





Label for Elderflower Elixir created by the painter Ana Maria.



“Nature Rhythms and Producing Art in Arouca Geopark - Portugal”

Semente de Futuro (“seed of the future”) is a Social Solidarity Cooperative within Arouca Geopark.

We work together as volunteers sharing leadership, and always use local resources on our small organic farm, the source of our products. “Personal growth is the basis for sustainable development: growing vegetables is for us a cultural act which cultivates our inner beings.”— that is our motto. Thus we are trying to encourage the local community to accept Eco and Health Tourism.

The mission of our artists in residence is to underpin our creative concept and to introduce Land Art both in the farm and en route to the geosites.

The work of self-help groups involving social therapeutic painting provided the stimulus for nature observation activities and led us to discover our different artistic skills, as reflected by the art produced. This process is compatible with biodynamic farming, food processing and creative cooking, which uses edible native wild flowers and aromatic herbs, such as “morugem” (*Stellaria media*) for salads.

At the same time we strive to maintain and preserve some species that are at risk of extinction. We keep a flock of special sheep (“churras”), for instance, providing us with precious wool while our wonderful bees contribute to the farm’s



balanced ecosystem. We are also particularly proud to preserve two species of newt (*Triturus marmoratus* and *Triturus boscai*) and fireflies (*Luciola lusitanica*). We feel that, as complete human beings, it is not sufficient to just enjoy the natural resources for our personal benefit; we should also take social responsibility for all living beings, within and between species.

We also make our library and the school library available to the local community, which has remained mostly unaware of the Geopark’s geological and biological riches. By promoting information sessions and experiences that integrate art, education and the environment our outdoor creative, playful practice sessions with children and parents constitute a form of open-air “school”.

Only by empathising with Nature as a marvelous masterpiece can people be encouraged to work for its preservation, keeping it safe, sustainable and alive.

Social therapeutic painting groups in “Semente de Futuro”.

Children learn to identify and understand the characteristics of newts.



Ana Jesus, Bonina Brandão & Urtelinda Ramos

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NORTH PENNINES

Area of Outstanding Natural Beauty

A historic shelter restored to celebrate the anniversary of an iconic trail

Walkers climbing the highest point in the North Pennines Geopark will be able to take refuge from one of the country's wildest winds thanks to the restoration of its peak's cross-shaped shelter.

The dry-stone shelter at the top of Cross Fell has been falling into disrepair for many years but the iconic structure is now even fit to protect St Augustine who, according to legend, was said to have blessed the inhospitable hill to protect it from evil spirits.

Over a period of four weeks, local craftsman Laurie Lambeth led the restoration project. Accompanying Laurie were two trainees from the Geopark's Heritage Skills programme.

The completed structure now stands proud on top of the 893m plateau, and will provide protection on all sides from the wind, snow and the vicious Helm Wind; the only wind in the UK to have a name.

Thousands of walkers use the traditional shelter when walking the long-distance hiking trail, the Pennine Way. The restoration project was inspired by the iconic route's 50th anniversary in 2015.

Simon Wilson, the Geopark's Access Specialist,

The restored cross-shaped structure will provide shelter for walkers for many years to come ©Laurie Lambeth



**EUROPEAN
GEO TOURISM
GEO PARKS**

Master craftsman Laurie Lambeth at work © North Pennines AONB Partnership.



said: "It's the Pennine Way's 50th anniversary in 2015 and the shelter has been here at least as long as the route, but it hadn't been fulfilling its purpose for quite a few years."

As part of the celebrations to mark the trail's anniversary, the BBC has filmed a special television programme to be aired in 2015 with Paul Rose, the Vice President of the Royal Geographic Society, as presenter.

Laurie said: "The Cross Fell shelter has been a very interesting project to work on. It has always been an important local landmark, and so it was a privilege to restore it back to its former glory".

"We taught Paul some basic walling skills, and with some help he laid a number of stones that now form a part of the shelter"

"It's nice to think how many walkers will benefit from the new shelter. For some who get caught out in the fast changing and unforgiving weather, it could even be a life saver."

The shelter on Cross Fell, the highest hill in the North Pennines Geopark, needed complete restoration © North Pennines AONB Partnership.

Peter Samsom

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Fossís ice cream is the best!



Isolation Sparks Innovation

In Katla Geopark the magnificent geodiversity provides an inspiration for the development and way of life of the local people and is candy for the soul for travellers in the area.

Since Katla Geopark was admitted to the EGN, much work has been achieved in linking the geology and culture of the area by improving access to our hidden gems and enhancing the accessibility for tourists to educational material and local experiences through our local travel guides and packages.

The Katla Geopark area used to be isolated from neighbouring communities because of unbridged glacial rivers that were difficult to cross, a southern coastline with no natural harbours, inland mountains and icecaps. This environment fostered on the one hand innovation and entrepreneurship, and on the other an understanding of the natural forces. Today the environment is very different – Katla Geopark is accessible all year round and at the same time introduces visitors to one of the most remote and unspoiled areas of Iceland.

The spirit of innovation, however, still flourishes in the Katla Geopark area. Þorvaldseyri, a pioneering farm for growing cereals in Iceland, now



has an exhibition on the Eyjafjallajökull eruption in 2010. The farm has its own micro hydro power generation, a hot water borehole, and is now experimenting with using rapeseed oil both for cooking and as fuel for the tractors on the farm. Þakgil is another example. A new camp site has been developed from scratch very close to the Katla Volcano. A micro hydro power station has been built providing electricity for the camping huts, and an open air dining facility has been carved out in a cave in the soft palagonite formation. Super Jeep Tours is another innovation providing glacier walks and snowmobile tours on the glaciers and icecaps of Katla Geopark including Eyjafjallajökull, Sólheimajökull and Mýrdalsjökull.

Lamb, beef and arctic char are the most common local foods available within the area and are served in all restaurants and hotels within the Geopark. Finally, locally produced ice cream is just another great reason for visiting Katla Geopark.

On top of Eyjafjallajökull glacier.

Seljavallalaug – an old and unique swimming pool built in 1927.



Isolation sparks innovation Katla Geopark

Steingerður Hreinsdóttir

Sigurður Sigursveinsson
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Assynt, voted the UK's favourite landscape by the Geological Society of London.

Could Social Enterprise be the future for Geoparks?

The North West Highlands Geopark, situated in the remote northwest region of Scotland, covers an area of 2000 sq. km and is home to just 2000 people. Having recently been voted the UK's favourite landscape in a public poll organised by the Geological Society, its attributes are well known among those with an interest in geology. The challenge for this Geopark is to broaden the appeal of the spectacular landscape of the North West Highlands and use it to help bring prosperity to this very sparsely populated wilderness.

The Geopark team has developed a social enterprise model to safeguard financial security for the future, developing revenue streams from advertising and sponsorship to complement grants and funding from more traditional sources. At the core of the Geopark is the concept to "Explore Deep Time" a tribute to James Hutton, the father of modern Geology. An exciting new Geo-centre exhibition will open early in 2015 to complement a range of geo-routes, geo-tours, geo-pods and geo-adventures aimed at engaging all ages and a wide range of interests in science, nature and

history of the landscape.

The conventional approach to securing income for projects such as these has been to apply for one-off grants or target the social responsibility budgets of corporate sponsors. North West Highlands Geopark believes, however, that their unique landscape and place in the history of Earth science commands a value which corporations will seek to secure for their brands. Initial feedback for this business focussed model for a Geopark has been very encouraging and the North West Highlands Geopark looks forward to announcing a corporate sponsor for their innovative Geo-pod programme of information delivery early in 2015.

Geo-adventure climbing instructors prepare for "vertical" tours of Torridonian Sandstone sea-cliffs in the Geopark.

Mike Goodwin

Marketing Manager, North West Highlands Geopark (mike@nwhgeopark.com)

North West Highlands Geopark staff with statues of the great 19th century geologists Benjamin Peach and John Horne at Knockan National Nature Reserve.



Geo-adventure climbing instructors prepare for "vertical" tours of Torridonian Sandstone sea-cliffs in the Geopark.



A chef discusses recipes based on using the products of local producers.

Magma Geopark Engages with Communities by developing local menus: the GEOfood project

In March 2014 Magma Geopark received a grant from the Norden Fund-KreaNord programme for developing GEOmenus in the Nordic Countries.

The project originated from the Geopark's resolve to combine local culinary specialities with geo-tourism activities. Magma Geopark, the project leader, is involved with eight other partners: Odsherred Geopark, Denmark; Rokua Geopark, Finland; Reykjanes Geopark, Iceland; the Suðuroy Island Geopark project in the Faroe Islands; Stonehammer Geopark, Canada, Fernando de Noronha Aspiring Geopark, Brazil; Shetland Global Geopark, Scotland and Subbéticas Geopark, Spain.

The project aims to:

- Promote local food as a unique Geopark experience.
- Valorize the local small and medium sized enterprises (SMEs) in the food and tourism sector in the Nordic Countries.
- Promote the creative industries, like local chefs and local video makers.
- Expand the Geopark's tourism offer with specialized packages including local food.
- Increase the visibility of the Geoparks through the tailored booking channel (GEO2NOR booking system).

The project's specific objectives are:

- Developing three local menus in each Geopark
- Developing one common menu within the Nor-

dic Countries' Geoparks.

- Developing strong business relationships between local SME's in food and geo-tourism
- Providing the EGN/GGN with common standards for the development of GEOfood menus.

Each Geopark will investigate possibilities for promoting local food and finalize the SMEs experiences in combining GEOmenus served in a chain of selected restaurants.

Several local actions have been planned: three workshops will be organized by each partner in order to share ideas and suggestions for the content of the menus.

Cooperation with local food producers and local small enterprises aims to create partnerships that will continue beyond the duration of the project.

The GEOmenus will be included in the local Geopark's activities, increasing the competitiveness of the Geopark's tourism offer in the tourism market. Food and tourism will be linked for the valorization of the geological, cultural and natural heritage. Common quality standards will be defined for the GEOfood brand supported by the experience of Stonehammer, Shetland and Subbéticas Geoparks. Other Geoparks could benefit from the results of this project and promote GEOfood through the European and Global Geoparks Networks.

Pål Thjømøe, Sara Gentilini

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The pottery produced by the Czech, Hungarian, Polish and German participants



We love the Muskau Arch Geopark!

First International Geopark Camp “Art Meets Geology” Is Over!

From the 29th of June to the 6th of July, 2014 the European and Global Geopark Muskau Arch hosted 23 young people from from Bakony-Balaton Geopark (Hungary), Český Ráj (Bohemian Paradise, Czech Republic) and the Polish and German regions of Muskau Arch Geopark.

During a period of eight days, the young people discovered the cultural and glacial landscape of the Muskau Arch, and were also involved in workshops producing historical crafts based on the use of natural resources. At the beginning of the 20th century the region was renowned for the production of glass and ceramics.

The 12 to 14-year-old participants gained their first practical experience during the workshop visits on day-one. A wood carver, an artist, a ceramist, a glass cutter and a stonemason demonstrated their skills in five different studios and workshops. There, the group experienced the nature of the materials, the use of specific tools and made their first practical attempts. The artists described their daily work and impressed the group with their enthusiasm and passion. Then came the most difficult moment for each participant: which material to choose? Which studio or workshop to choose for making their work of art?

During the next few days, the young people spent 3.5 hours each day in three workshops with



Bruno, Herbert and Theo (G) present their results.

the opportunity to express their creativity. They learned how to process their chosen resource material, how to use specialized tools and also to respect the physical effort and high degree of precision associated with the artists' work. Eventually each participant created his or her own art object – and even the artists were impressed by their variety. The results, six wood carved reliefs, eight stone reliefs, a bipartite earthenware relief and numerous pottery vessels, seven acrylic paintings and cut glasses or goblets, are currently shown in the “Art meets Geology” exhibition which will tour the participating geoparks

beginning this autumn. The exhibition illustrates the range of creative ideas and manual skills of both young and established artists in transforming the typical resource materials of Muskau Arch into works of art.

And the conclusion by the young camp artists? Pretty hard – pretty thrilling – pretty cool!

The camp also included excursions and fascinating activities such as a boat tour on the Neisse River, a night hike by torchlight, or bathing and swimming – no time for boredom, that's for sure.

Dipl.-Geogr. Nancy Sauer,
Head of the Geopark Office Muskau Arch

M.A. Corinna Rudolf,
Vice-Head of the Geopark Office
www.muskauer-faltenbogen.de



Participants in front of the Walser Museum (Alagna, Valsesia).



Processing of the data in the GeoLab (Vogogna, Val Grande).

EduGeoPark Research:

An innovative student exchange partnership between Sesia Val Grande and Rokua Geoparks

In 2013, Sesia Val Grande (Italy) and Rokua (Finland) Geoparks initiated a new partnership to develop an exchange programme for students from Secondary Schools.

The programme aims to engage students and teachers in research activities in the Geoparks involving sampling and digital mapping, and developing the practical field and laboratory skills required for interpreting the geology of an unknown territory. The programme also aims to encourage teamwork and develop problem solving skills.

In April 2014, 20 Finnish students, accompanied by 4 teachers from Vaala High School, visited the Sesia Val Grande Geopark, and were hosted by families of the local Italian students (I.I.S. Luigi Cobianchi, Verbania). Researchers from the Earth Sciences Department of the University of Torino, Italy, and Geopark teachers and staff led field trips to the area's main geological and cultural attractions. These included the Sesia supervolcano, the deep structure of the Alps, the Insubric Line, the Monte Rosa Glaciers; the Walser Community, the Candoglia marble laboratories used in the restoration of Milan Cathedral, and the Geopark's interpretation centres. Concepts explored included plate tectonics, the geological time scale, geomorphology, climate change, volcanism, rocks, geo-resources, geology and the local culture.

The Italian students guided their friends in using an application suitable for smartphone and tablet, to track their scientific expedition in the the Geopark and to gather geo-referenced data and pictures. In using digital and traditional tools, they observed, asked questions, gathered data, and created hypotheses and together with the local guides, they reconstructed the cultural and geological history of the area. The digital data were downloaded in a Google Earth format for post-field trip processing and discussion. Connecting landforms and the features of a landscape to a history is useful for



understanding the need of protecting the geological heritage.

An example of teamwork in the field.

In November 2014, the Italian students visited Rokua Geopark, and were hosted by the Finnish families.

International student exchanges between Geoparks provide a window of opportunity, allowing students to experience geological phenomena and processes that do not exist in their own country. Living with the hosting families allows students to experience the culture of the area, to make new friends and to improve their language skills.

The exchange project will continue. Geoparks are ideal destinations for developing innovative, international educational programmes which promote cultural values and the concept of sustainable tourism.

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Geopark EU project widens horizons for young people across Europe



The E-School links students from five European Geoparks with Hong Kong.

Thanks to Comenius funding, students and teachers from five European Geoparks and one Natural Park were hosted by the students and teachers of Churston Ferres Grammar School in the English Riviera Global Geopark during September 2014.

During the week-long visit the students had the opportunity to engage with each other, take part in many activities and visit some of the English Riviera's key sites including Kents Cavern and Berry Head National Nature Reserve. The group also enjoyed a Geopark cruise where they learnt about the spectacular geology and wildlife of the Geopark coastline.

During the final day of the visit, the English Riviera Global Geopark co-ordinated a live e-school session with the Hong Kong Global

Geopark for the pupils. The Hong Kong Geopark staff showed the participants the unique formation of the Sai Kung Volcanic Rock Region and the Hong Kong Global Geopark Volcano Discovery Centre, which opened in July 2014.

Melanie Border, English Riviera Global Geopark Coordinator said "Our sister partnership with the Hong Kong Global Geopark is well established and active, so having the opportunity to link so many students from five Geoparks together with the Hong Kong Global Geopark in one live link was fantastic. As you can imagine all were fascinated and had many questions."

Maria James from Churston Ferres Grammar School said: "So far under the project, students, from Churston have visited the Geoparks in Hungary, Sicily and Norway experiencing firsthand the cultural and geological experiences of the local communities."

"Partnerships like this not only help to build trust and understanding between people of different cultures but also broaden the pupils' horizons, bringing languages and other subjects to life in the classroom."

"It also equips young people with the skills and understanding they need to become global citizens"

The five Geoparks involved in the 2 year Comenius exchange project are the English Riviera Global Geopark - UK, Gea Novegica - Norway, Nature Park Bergstrasse Odenwald - Germany, Madonie Geopark - Italy, Novohrad-Nograd - Hungary and Slovakia plus the Ardenne Natural Park - France.

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The E-School view from inside the new Volcano Discovery Centre, Hong Kong Global Geopark.





Front cover of the book *Conocimiento del Medio Natural, Social y Cultural Geoparque Villuercas-Ibores-Jara*.



Participants in *Geoconvivencia 2014*.

Improving teaching resources in Villuercas-Ibores-Jara Geopark

The Geopark has a presence in schools through the activities coordinated by an educational working group. It comprises representatives of the Extremadura Regional Ministry of Education and members of the Geopark's Educational and Scientific Committee. This group creates and develops teaching resources and learning activities.

The experience of creating our first teaching materials and their application in workshops has resulted in the development of more complex educational tools and activities. The earlier teaching materials promoted learning by play of some basic concepts related to the palaeontology, geology, history and culture of the Geopark. The need for supporting literature, requested by primary school teachers, was resolved by the production of an iBook "Geosites" and by the new textbook "Environmental Awareness of Villuercas- Ibores-Jara Geopark".

This lavishly illustrated book, which complements the Environmental Awareness subjects in the final years of Primary Education, is also useful for teaching the Natural and Social Sciences subjects in Secondary Education. Topics include

the Geopark concept, the physical environment, basic geological concepts, the geological heritage in Villuercas- Ibores-Jara and the nature of ecosystems. The book also includes information on the Geopark's flora and fauna, economic activities, history, culture and traditions. The book's content was designed by professors José M^a Corrales, Manuela Rodríguez and Jesús Vazquez.

The iBook "Geosites" for iPad devices is available on the iBookstore. A PDF copy of the Textbook "Environmental Awareness of Villuercas- Ibores-Jara Geopark" is available on <http://www.geoparquevilluercas.es/canal/contenidos-de-aprendizaje/>. The book will be expanded to include the following activities planned for the 2014-2015 school year:

- Implementation of activities and workshops: Experimental activities related to the chapters in the textbook.
- Compilation of activities and workshops for a new book of activities. Creating a second publication of practical activities related to themes in the textbook.
- Geoconvivencia 2015. This is a Special Day involving the participation of several Primary Schools. The programme contains fun activities, geological workshops and a seminar in which students show the results of their teamwork activities linked to the geopark.
- Educational Tours. The geological sites will be visited by the students and the teacher's ability to interpret the geological heritage will be improved.

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The wall in Cañamero School illustrating aspects of the Geopark.





A visit to the Lesvos Petrified Forest Park.



Prof Nickolas Zouros leads a guided visit to an ancient marble quarry.

“Lesvos Geopark: The island of natural wonders and culture” An educational adventure through time: 300 million years in 96 kilometers !

Lesvos Geopark’s new educational programme involves a journey through 300 million years of geological history in 96 kilometers. Beginning in Mytilene, the capital of Lesvos Island, and ending in the protected area of the Petrified Forest of Lesvos the participants learn about the geological, natural, cultural and archaeological monuments of the Lesvos Geopark.

The Lesvos Geopark, an important geological, ecological and cultural repository of the Earth, contains exceptional and important geotopes including volcanoes, large faults and significant fossil sites. The Lesvos Petrified Forest, designated by the Greek State as a Natural Monument, dominates the western area of the Geopark. Given its unique natural environment, the large variety of ecosystems, bio- and geosites, Lesvos Global Geopark is an ideal destination for educational activities.

The Lesvos Geopark is closely connected with Aristotle and Theophrastus, two of the most important philosophers of antiquity. In 347 BC Aristotle visited the island and was captivated by the wildlife. He investigated the animal life in and around the lagoon of Kalloni, while his student and friend, Theophrastus, studied the plants. This activity led to the birth of a new science – biology. Theophrastus, was born around 371 BC in Lesvos and his botanical studies had a significant influence on medieval science. He also wrote on eth-



Students visit the Roman Aqueduct in the Geopark.

ics, logic, biology, physics, metaphysics, mathematics and astronomy.

Students participating in the educational programme visited, observed and recorded the nature of the major geosites in Lesvos Geopark, learned to understand the geological phenomena associated with their origin and about their significance in the development of the Aegean

Sea region. They recorded data on the geological structure and rocks of Lesvos and discovered the processes and phenomena involved in creating the Geopark’s landscape and the interaction between man and the landscape.

In the Petrified Forest students uncovered the secrets of an entire ecosystem, fossilized 20 million years ago, and made observations on the vegetation, climate, geological changes and palaeogeographic evolution of the Aegean region.

This educational programme aims, through a hands-on approach, to develop the knowledge and skills required in collecting and recording data in order to understand the geological phenomena of Lesvos Geopark and its Petrified Forest. The programme also aims to stimulate the student’s imagination and interest in the history of the geological evolution of the Geopark, the importance and protection of geotopes, contemporary environmental problems, as well as in natural processes and natural phenomena.

K. Mpentana, N. Zouros



An aerial
Photograph
of Dunhill
Castle taken
from a camera
mounted on a
kite.

Copper Coast Geopark: Archaeology from Above & Below

The Copper Coast Geopark took to the skies this year for a bird's eye view of our Geopark, not only for a new perspective of the present but also in the hope of catching a glimpse of our past.

This award winning project is one of my favourites to date, combining various disciplines including science, art, geography, geology, history and mathematics. Working with the 5th. year students from Stella Maris Secondary school, the aim was to investigate a local cultural heritage site using a combination of KAP, (kite aerial photography), ground photography, sketches and measurements. All of these activities, including a historical lecture on site, were part of the schools visit to the medieval Dunhill Castle

The scientific aspect of archaeology helped students understand the reasoning and technology behind remote sensing, and more importantly, the experience of conducting a geophysical/archaeological survey. Applying skills and knowledge from multiple sources helped solve problems and aid research. Developing skills in seeing, viewing and visualizing greatly aided the reconstruction of the story from traces and residues, absences and presences.

The resulting A1 poster was then submitted as a 'brick' in the Heritage Wall exhibited during the "Archaeology Above & Below" seminar in Balla, Co. Mayo on April 2014. The Seminar and Conference was attended by archaeologists and geophysicists from around Europe and was opened by An Taoiseach, Enda Kenny (Irish Prime



The kite and camera flying above Dunhill Castle's east tower.



A1 poster: KAP study of Dunhill Castle and the Anne Valley.

Minister). The emphasis this year was "Women in Science" and included inspiring talks from women working in the various sciences.

The students were awarded a KAP kit by Dr. John Wells, chairman of the West Lothian Archaeological Trust, Scotland, who commended them for an outstanding piece of work adding that the KAP images were of exceptional quality compared with all the others in the scheme including Professionals and PhD students.

The Students' entire project work poster was exhibited in the Copper Coast Geopark Centre as part of the European re-align Geoparks Week Programme.

School group presented with a summary of an educational hike in the Rokua esker and dune areas. Field excursions are a regular activity in many schools in Rokua Geopark.



Rokua Geopark initiated the first Geopark schools in Finland

Rokua Geopark has, over a number of years, cooperated closely with local schools and other educational institutions. Several introductory lessons and workshops for teachers have been organized together with professionals from the Metsähallitus and the Geological Survey of Finland. In addition, many themed days have been arranged for students especially during an environmental education project funded by the European Regional Development Fund.

As a result the teachers have experienced the possibilities of Rokua Geopark and its sites for environmental education and outdoor activities and have also realized the importance for pupils to have a better understanding and appreciation their home region.

The schools recognized the need to become "Geopark Schools" and recently interest in this concept has grown considerably. The renewal of national curricula, together with the concomitant increase in the demands for nature education and the Geopark's activities, have contributed considerably to this development. During the autumn of 2014, Rokua Geopark responded to this need by drawing up instructions for educational institutions to apply for authorization to call themselves Geopark Schools (e.g. Geopark High School) enabling them to communicate and include Rokua Geopark's role and logo within



A School group investigating the deepest kettle hole in Finland which is situated in the middle of Rokua Geopark.

their educational activities. The first Geopark Schools have already been established.

To include the Geopark's aims, the educational institution has to fulfill certain criteria. For example, the institution should develop programmes that use the themes and sites of Rokua Geopark that are commensurate with the age of the pupils. The institutions' policies and educational provision need to be compatible with Rokua Geopark's themes, values and policies, comply with in the principles of sustainable development and contribute to the aims of the Geopark. The educational institution has to organize, in conjunction with Rokua Geopark, "Introductory Geopark Classes" for their personnel and appoint a person to take the lead in coordinating Geopark-related education and communication activities.

The criteria were established following the general guidelines and educational principles of the Geoparks Networks and, in more detail, the values and aims of Rokua Geopark. The criteria seek to prevent the misuse of the Geopark and its logo, to promote the inclusion of the Geopark's themes in the schools' curricula and to encourage the schools to contribute to the aims of Rokua Geopark.

Rokua Geopark has a visible presence in local schools. A view from the natural sciences class room in one of the schools. The schools use Geopark themes, such as the landscape shaped by the ice, in their curricula.



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Observing raptors at “Katavothres of Lousoi” Geosite. EuroBirdwatch festival 2014.

Chelmos – Vouraikos Geopark

“Educational, research and networking activities”

Numerous activities, undertaken in 2014, increased the visibility of the Chelmos-Vouraikos Geopark within the local community.

Considerable effort was devoted to environmental education activities which focused on the following groups: 1) local schools and students, 2) the general public and 3) domestic and foreign research institutions. During the “Week of Environmental Education” the Management Body of Chelmos-Vouraikos organized a campaign directed at 1500 students and 200 teachers, and delivered to all schools within the protected area. The week ended with the participation of Chelmos-Vouraikos Geopark in the EuroBirdwatch14 festival which included observing raptors and hiking along a new geotrail in the area with a group of teachers that specialize in environmental education issues. Both events involved a comprehensive presentation on the Geoparks’ values and goals, the special geological features of the Geopark and also included valuable discussions on all aspects of the European and Global Geoparks Networks.

Chelmos-Vouraikos Geopark contains a large variety of Geosites which cater for a wide range of activities and scientific disciplines. Due to its importance the region has experienced an increasing number of visiting scientists. During last year, in addition to the ongoing investigations by Greek researchers, more than 10 scientific groups (geologists, biologists, ecologists, and environmentalists) from eight different European countries have requested special permits in order to conduct research within the Geopark’s territory. Working together with these groups has resulted in amassing additional scientific information and the creation of a network of collaborators that further enhances and promotes the



scientific activities in the protected area.

In order to better facilitate the economic development of the region within a sustainable framework, the Geopark collaborates with the local associations by organizing workshops addressing local producers, advertizing local products, participating in activities and exhibitions on alternative tourism, promoting environmental education and producing a large amount of information concerning the protected area.

All the above activities have greatly improved the visibility of Chelmos-Vouraikos Geopark in the region and increased the number of visitors in the protected area.

Exploring the non-touristic part of the Cave of the Lakes a prominent Geosite of Chelmos-Vouraikos Geopark. (In collaboration with the Office of Palaeoanthropology-Speleology of the Ministry of Culture).

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Management Body of Chelmos-Vouraikos,
Ag. Alexiou 35 Kalavryta, Greece.

Left: Participants in the training course view an example of a rock exposure in the Geopark.

Right: The training involves an introduction to fluvial processes.



Training course for Geological Heritage Guides in Sobrarbe: A tool to create new employment in a Geopark

The Sobrarbe Geopark organised a training course for Geological Heritage Guides in Sobrarbe from the 17th October 2014 to the 14th February 2015.

The contents of this course have been designed by the scientific coordinator of the Sobrarbe Geopark to meet the challenge of training people and enterprises with little or no knowledge of geology to use the Geopark's geological heritage as an economic resource for new enterprises and for creating employment.

The aims of the Geopark in organizing this course are as follows:

- To train people who wish to use the geological heritage of Sobrarbe as a social, cultural and economic resource.
- To promote the geological heritage as a factor for developing and enhancing the creation of new employment in the territory of the Geopark.
- To initiate new entrepreneurial projects related to the use of the geological resources.
- To promote the conservation and appreciation of the geological heritage, by increasing local participation.

People enrolled in this course are mostly new entrepreneurs wishing to develop activities involving the dissemination of geological heritage such as hiking, rafting and other adventure activities, tours, workshops and educational activities with different groups. They also include local enterprises and the staff of several companies engaging in services related to the natural and cultural heritage of the area involving outdoor activities, adventure sports, environmental education and environmental activities. Some tourism professionals, whose work includes interacting with visitors and communicating knowledge about the natural and cultural resources of the



area (hotel staff, restaurants, tourist offices, museums, interpretation centres and other points of information), wish to increase the quality of the services offered with more specialized information.

Thirty five people have registered to attend this training course. The course includes a theoretical and a practical component consisting of field visits which take advantage of the infrastructures developed by the Geopark, such as geological trails and the inventory of geological sites.

Ultimately, this course aims to signify Sobrarbe Geopark's commitment to the preservation and dissemination of knowledge about the geological heritage and to stimulate the the creation of employment for local people.

An example of the Geoparks dramatic landscape and contrast in its geology.

SOBRARBE GEOPARK
 Anchel Belmonte Ribas
 Ana Ruiz Conde

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Beautiful basalt columns visited during the field trip for the Keszthely Hills training course.

Opening the geological treasure chest of Bakony–Balaton Geopark

The geotour-guide training courses, coordinated by the leading body of the Geopark, the Balaton Uplands National Park Directorate (BUNDP), are one of the 'engines' for the geotourism programmes in Bakony–Balaton Geopark. These 60 hour long training sessions – the only available geotour-guide training courses in Hungary to-date – have been organised since 2009. So far seven courses have been delivered in different regions of the Geopark. However, there is still much for future geotour-guides to discover or for those who just simply would like to understand and appreciate the territory's outstandingly diverse geological and geomorphological features.

Altogether 98 people have participated in the programme, and some of them are already working in tourism. Thanks to the enthusiastic participants who completed more than one course, 172 certificates have been issued. Three courses were completed with the involvement of civil Geopark Partner Organizations, who successfully applied for funds to make the courses financially accessible for more participants.

An exciting experiment to illustrate volcanic processes, performed by one of the guides.



Participants listening to János Futó, geologist, one of the instructors.

The courses offer a unique opportunity to discover the geological, hydrological, ecological and historical heritage of the Geopark, with the guidance of highly experienced experts. We have received very positive feedback regarding the quality of the training, and the guides now work together as a cohesive community. Besides providing participants with an interesting and joyful experience, the courses also offer a great opportunity to develop new geotourism services. More than ten certified guides have become Geopark Partners of the BUNDP. For a modest annual fee, they can use the Bakony–Balaton Geopark Partner logo and their guided geotours are promoted by the Geopark. They can also take their geotour participants to the BUNDP's visitor sites at a discounted entrance fee.

Some of the Geopark Partner guides also lead geotours in English and German. They are eager to show you the geological wonders of Bakony–Balaton Geopark. You can read about them and their geotours at www.geopark.hu.

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Location and view of the Veneris Hair Waterfall Geosite.

Local Geopark CareTakers: an fruitful experience at Veneris Hair Geosite (Casaletto Spartano, Eastern Bussento River Landscape)

Since 2010, one of the focal points for the Cilento-Vallo Diano Geopark has been the involvement of young people in the management of geo-heritage.

The feasibility of the above objective was recognized during the field trip following the 12th EGN Conference in September 2013 to the “Veneris Hair Waterfall”, near Casaletto Spartano village, involving the participation of young people together with musical entertainment. Based on this initial experience, an agreement was reached between the local government, local professionals and the Geopark management to create a new procedure involving young peoples’ involvement in geosite management.

The requirements of the new professional should include: a good knowledge of the specific geosite, its connections with the local traditions, culture and economy; sufficient knowledge about Geopark geodiversity, Geopark trails, public and private transport and accommodation. The ability to accompany all categories of visitors, ranging from week-end visitors to more experienced geo-tourists and to participate in voluntary services involving geosite conservation and the maintenance of reception facilities.

All the above requirements must be supported



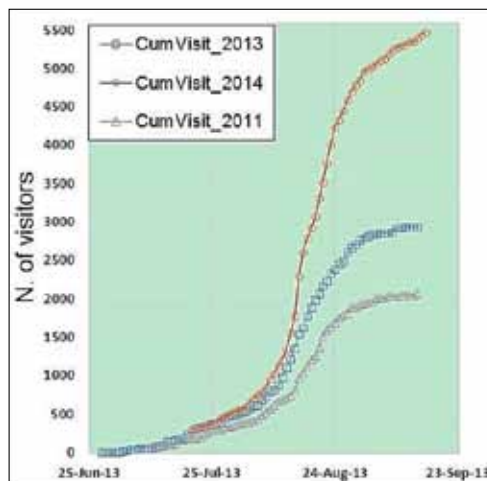
Young Local CareTaker in action at the Veneris Hair Waterfall and Spring Geosite

by an understanding of the need to take care of the landscape, a strong awareness of the local identity leading to a strategy for the sustainable use of local environmental resources and an appreciation and understanding of the role of management .

Based on these factors, the new concept was called “Geopark Local CareTaker” (LCT). During the last summer a LCT start-up activity was initiated at the “Veneris Hair Waterfall”, managed by the dr. Arnaldo Ludici, as Local CareTaker Manager, and the dr. Aniello Aloia, as coordinating Geopark Manager.

This resulted in a significant increase in visitor numbers, both local, national and international, a good review on Advisor Traveller Agency, and the award of a certificate of excellence.

Based on these results, an advanced Geopark Local CareTaker Course will be held early next spring to extend the experience to other selected geosites so that local governments can continue with their commitments to the Geopark, involving coordinating the management of local geosites and the extension of visiting periods for educational activities for high school and university students.



A graph showing the past seasonal cumulative attendance curves for the visitors at the Veneris Hair Waterfall Geosite

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Cooperation between Global Geopark Bergstrasse-Odenwald and WHS Messel Pit (Germany):

Geo-education, geo-products, geo-communication and geo-tourism



Left: Geoworkshop 2 at Messel Pit – creating fossils with natural materials.
Right: Messel-honey – Geopark honey collected directly on site, an authentic product for both partners.

The Global Geopark Bergstrasse-Odenwald has, together with local as well as international partners like World Heritage Site (WHS) Messel Pit, developed a wide range of communication and educational tools. The holistic Geopark concept of connecting the geological, natural and cultural heritage fits perfectly with the philosophy of WHS Messel Pit, which presents its outstanding universal value (OUV) to the public in an innovative way. In this context, a broad communication strategy, combined with visitor service and information as well as common events and products has been implemented.

Geo-education

The Geopark Rangers offer environmental education programmes for target groups of all ages. As part of their cooperation, the Global Geopark and the Messel Pit have jointly developed “geo-workshops with the Geopark Rangers at Messel Pit” for children from 7 to 14 years, presenting the main geo-scientific themes of the Messel Pit which are “rain forest”, “fossils”, “volcanoes”, and “below the surface”. Activities include creating fossils with nat-

ural materials, building a volcano or exploring the rain forest. Following two very successful years, the geo-workshop program will be continued in 2015.

The partner have has also developed a geo-educational card game with basic information on the Geopark and the WHS.

Geo-products

WHS Messel Pit has been integrated into the Geopark’s local honey network, which is called “Geopark honey – the sweet essence of nature”. In cooperation with a local apiarist, the Geopark offers “Geopark honey” which is produced directly on site and is sold in Messel Pit’s visitors centre to visitors from all over the world.

Geo-communication & geo-tourism

Both partners have also developed a range of communication tools including geotope brochures, common information leaflets, Earth history adventure maps, workshops, public lectures, and the presentation of the respective partner activities in their published magazines. In cooperation with the Odenwald Tourism Company, new trails and information packages have been developed, which inform visitors about overnight accommodation and activities in the Geopark and Messel Pit. The cooperation between Global Geopark Bergstrasse-Odenwald and Messel Pit, established during the last decade, is considered as a successful model for communicating our strong connection between geology, humans, nature and cultural heritage within the Geopark, within UNESCO’s World Heritage community and within the Global Geoparks Network.

Geoworkshop 1 at Messel Pit – an adventure trip with the Rangers to the Messel Rain Forest.



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El Roque de La Bonanza is a landscape symbol of El Hierro. This volcanic dyke in the area of Las Playas suggests two animals facing one another with their foreheads locked together.

El Hierro, the Island of 1,000 volcanoes

The first Geopark in the Canary Archipelago

At the westernmost and southernmost end of the Canary Archipelago, the smallest of the seven Islands is celebrating becoming a new member of the European and the Global Geopark Network. The El Hierro Geopark covers a surface area of 590km². This includes El Hierro Island, the surrounding islets (Roces or Rocks) totalling 278km² and the surrounding territorial waters, which extend up to 12 miles from the coast, adding another 312km² to the Geopark.

This Spanish territory, the most distant of Spain's possessions from the mainland, has carefully tended its natural and cultural heritage over the years. The island Government or Cabildo of El Hierro, the organization responsible for the management of the Geopark, has, together with the support of the island's approximately 10,900 inhabitants, decided to develop a different approach to tourism. Whilst the other islands adopted a more conventional tourism model, El Hierro Geopark has, with the wholehearted support of its inhabitants, adopted a process of reservation and preservation for social, economic and environmental sustainability. The results are there for all to see and enjoy. Since 2000, a large part of the Geopark is also a Biosphere Reserve and over 60% of the territory is protected using different legal mechanisms for safeguarding land or marine areas.

From a geological perspective, El Hierro, the youngest island of the Canary Archipelago, represents the crest of a volcanic shield that emerged from the sea around 2 million years ago. Its complex geological history can be easily appreciated with clearly visible, well-preserved examples of volcanic structures at varying scales including cones,



Above: The Open Fotosub underwater photography competition is organised by the Geopark and offers visitors the opportunity of combining geological observation with sport. Photo: J.R. Marcelino.



"Living treasures". The Geopark has allowed us to re-introduce traditional crafts, produced by the women on the island, such as the production of hand-crafted earthenware and typical pots.

pyroclasts, tuff-rings, lava outflows and columnar jointing.

The three-leaved shape of the island, produced as a result of the alignments of the volcanoes, corresponds to the three rift branches separated by basins formed by mega-landslides, the pronounced vestiges of which scar the surface of the island and extend underwater into the ocean. The various types of volcanic structures young toward the ends of the rifts. Thus, the most recent volcanic activity, dating back to 2011, occurred near the coastline of La Restinga, on the submerged portion of the southern rift.

The fact that the volcanic heritage continues underwater justifies the Geopark's boundaries. This heritage is largely accessible thanks to various specially designed facilities and devices and tailor-made activities. On land, we have the signposted network of trails, lookout points and

interpretation centres relating to the volcanology and the Biosphere Reserve. These allow visitors to experience the geology and natural heritage, flora and fauna while learning about the culture of the island through its archaeological sites and the remains of the native population of Bimbaches.

With respect to marine geotourism, in addition to the kayaks and sailboats that allow the visitor to observe the geology of the coastline, scuba diving is provided by businesses that collaborate with the Geopark. The "Open Fotosub" in the Integral Fishing Reserve has made the island and its geology famous the world over.

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Participants experience climbing and geology, a component of the GeoDynamicActive Programme.



Ore of the Alps

“Copper so close to the heavens”

The Geopark is located in the centre of the Province of Salzburg, Austria. It includes four communities, Bischofshofen, Mühlbach, Hüttau and St. Veit with a population of 17,000 inhabitants. Bischofshofen, the Geopark's oldest village, is famous world-wide for the annual ski jumping competition. The Geopark can be easily accessed via the Tauern Freeway (Tauern Autobahn), one of the most important roads through middle Europe to southern Europe. The capital city, Salzburg and the Airport W.A. Mozart, connected by regular flights from Vienna, Frankfurt, Berlin, London, Moscow and many other cities, can be accessed within 45 minutes.

The Geopark (212 km²) is situated in the “Innergebirg” (inner mountain area), and includes the Northern Calcareous Alps, the Graywacke Zone and the Central Alps. The Hochkönig mountain range in the Northern Calcareous Alps has an altitude of 2941 m and includes a permanent glacier, the “Übergossene Alm” (the “covered Alp” glacier). The mountainous Graywacke Zone region has pastures and forests extending up to an altitude of 2000 m. The Salzach Valley, which crosses the Geopark, is deeply incised into the soft rocks of the Graywacke Formation. All other valleys consist of extremely steep sided gorges. The discrepancy in the relative relief in the Geopark is very high with a variation in altitude of almost 2400 m.

The Geopark area has been permanently populated from 5,300 years ago. During the Bronze-Age, the region of Bischofshofen, Mühlbach, Hüttau and St. Veit was one of the most important sites for copper mining in Europe. The copper used in the world-famous Sky disc of Nebra was mined in this area. From the Middle Ages mining was extended to include gold, iron, lead and zinc. Since the 1970s all mining activities ceased but the mines still exist as a number of spectacular show mines.

The 77 geosites, which are described on the homepage www.geopark-erzderalpen.at, emphasize the great geodiversity of the Geopark and visits can be arranged through two programmes.

The GeoDynamicActive Programme is sporty! Rock formations, unique landscapes or the traces of mining activities, can be explored in selected tours, individually or in groups, either alone or accompanied by a qualified Geopark guide. These activities involve hiking, mountain biking, climbing, ski touring and snow-shoeing and are always combined with non-geological, but more or less dynamic and physical leisure entertainment.

The GeoEnjoyRelaxProgramme is based on “Gemütlichkeit” (cosiness). Geosites, which can be easily reached by short walks include visiting museums and show-mines and listening to lectures forming the focus of this “edutainment”. It involves a combination of non-geological activities, such as wellness, relaxing at an “oasis of silence and tranquillity”, farmers’ markets, farmers’ cookery courses, sports events, mountain exhibits and local alpine concerts. In addition the Geopark offers a great variety of local agricultural and high quality alpine products.

The Geopackages can be arranged according to the visitor’s choice. They are comparable to the ordering of a pizza: Pizza dough, tomatoes and cheese form the base, all the other toppings can be chosen individually. Altogether these outstanding experiences are guaranteed by the Association “Ore of the Alps”, in which four communities and tourism offices work closely together.

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Mountain biking in front of the Mandelwände.

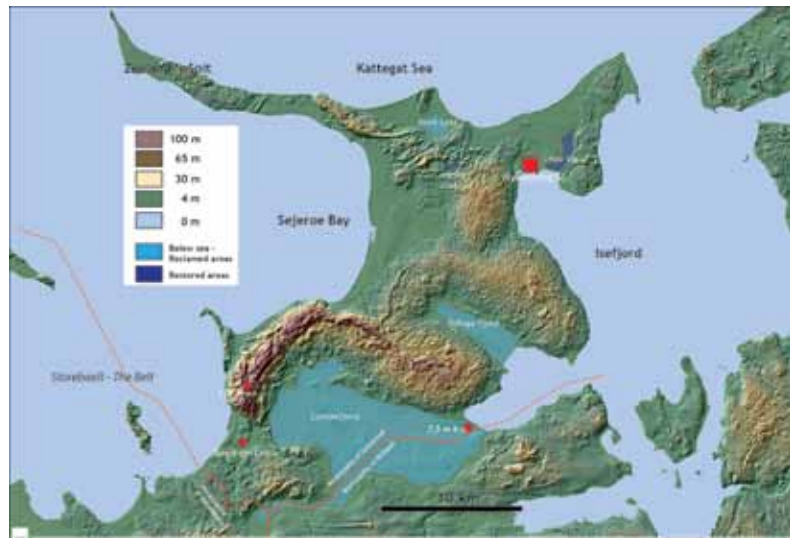


A tram used for transporting copper ore in the Sunnpau Show Mine.



Odsherred Geopark

A map showing the area of Geopark Odsherred.



Geopark Odsherred The first Global Geopark in Denmark

The Odsherred Peninsula landscape was formed only 17,000 years ago during the latter part of the Weichselian Glaciation. The Odsherred Arches are key sites for understanding the principles of glacial landscape formations from this period. They are also a classical geomorphological example of glacial depressions, end moraines and meltwater flood plains.

The combination of features represented in the glacial landscape, with their variety of detailed shapes, is demonstrated in very few places in Northern Europe in such a distinct and informative manner as in Odsherred. Surrounded by the sea to the east, north and west, Geopark Odsherred, also features active, coastal and postglacial processes, e.g. the formation of coastal lagoons and bogs, and sand migration, which are just as important to the understanding of the glacial landscape.

Geopark Odsherred is situated only 100km from Copenhagen, the capital of Denmark, and its area of 355km² coincides with the area of Odsherred Municipality. Since the ice melted about 10,000 years ago, humans have been making their mark on the landscape. The area has attracted people from far and wide since the early 18th century and Odsherred has developed as an attractive holiday destination. Today the area has 33,000 inhabitants living within 15,000 permanent residences. As a result of its 157km coastline Odsherred also has about 26,000 summer residences and the population rises to over 100,000 inhabitants during the summer months. This means that an assessment of the potential for geotourism in Geopark Odsherred is based on already

The coastal lagoon in winter – Photo: M. Diers



The glacial landscape in the morning mist – Photo: C. Starup.

existing data.

As from January 2015 an independent foundation, the Geopark Odsherred Foundation, will be established with its own professional board of experts, stakeholders and local politicians, income and general purpose description of the four Geopark themes. The Geopark has a small administration including two employees and a part time director. To run and develop the Geopark Odsherred Foundation it is essential to create a network organization including partnership agreements with local stakeholders, businesses and associations. Some of these partnership agreements are also based on socioeconomic developments where the products are promoted by the Geopark.

In Geopark Odsherred, the local resources are embedded in the magnificent glacial landscape. There is a direct connection between the geology and landscape morphology and the records of human activity in the Bronze Age when the national treasure, the Sun Chariot, was created. This connection continues through history to the 19th century when the shallow waters of Lammefjord were reclaimed for agricultural use to create today's vegetable garden of Denmark. The landscape paintings of Odsherred's Painters in the 1930's has inspired modern artists to settle in Odsherred. The four themes - geology and landscape, cultural history, art and local produce are the core of Geopark Odsherred –the first Global Geopark in Denmark.

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A field trip in the Terras de Cavaleiros Geopark.



Sailing activities in the Terras de Cavaleiros Geopark.

Terras de Cavaleiros Geopark

Terras de Cavaleiros Geopark is located in the region of Trás-os-Montes in northern Portugal within the area of the municipality of Macedo de Cavaleiros. It has a population of 15,776 inhabitants and covers an area of approximately 700km². The Geopark is managed by the Terras de Cavaleiros Geopark Association, a non-profit association consisting of 11 founding members which include public and private institutions.

Within the Geopark one can observe and access geosites that document an important stage of Earth history, in particular a more than 500 million year old sequence of rocks in which continental rocks overlie the ancient oceanic crust. In addition, sediments that prove the existence of an ancient fluvial network that once drained the interior of the Iberian Peninsula are recorded together with the presence of active faults, such as the Vilaríça Fault which crosses the whole territory of the Geopark.

The Terras de Cavaleiros Geopark also has an important industrial heritage associated with former tin, tungsten, silver, lead, antimony and asbestos mines. The natural heritage is characterized by stunning landscapes and a well preserved flora and fauna. The Geopark has one of the most complete networks of hiking trails in Portugal. For over 180km, involving 24 signposted trails, hikers can enjoy thematic routes through agricultural landscapes, the geological and biological sites as well as cultural routes showing traditional ways of life. The 110km Geological Route, includes some of the most important geosites in the Geopark's territory.

The Terras de Cavaleiros Geopark's significant historical, archaeological and artistic heritage is represented in public, private and religious buildings, by old bridges, pillories and fountains. The Geopark's cultural identity is characterized by traditions involving the preservation of typical food recipes, regional products and people's memories as well as associations that organize art events, including dance, theatre or music.



The Terras de Cavaleiros Geopark has implemented a geotourism strategy to improve the accessibility and safety of geosites and to enhance visitors' experiences through the placement of signage and interpretative panels. Implementing the geotourism strategy involved establishing partnerships with regional economic agents including hotels, restaurants, tour operators and with anyone who contributes to the preservation of the rich heritage and traditions that represent the values of the Terras de Cavaleiros Geopark.

The Lagoa Gneiss geosite.

Enjoy an adventure by immersing yourself in Terras de Cavaleiros Geopark's landscape, emotions, art, colours, flavours and unforgettable scents!

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Sílvia Marcos and Ana Lima



Geoparks

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*We hope that you will
enjoy a visit*

THE EUROPEAN GEO PARKS NETWORK

www.europeangeoparks.org





European Geoparks Conference

September 3rd–6th 2015



Conference theme:

Responsible Use of Natural and Cultural Heritage

A warm Welcome to the
13th European Geoparks Conference

Rokua Geopark has the honour of hosting the next European Geoparks Conference. The conference will be held in Finland at Rokua Geopark and in the city of Oulu from 3rd to 6th of September 2015. The conference is expected to attract more than 300 participants interested in Geoparks, tourism and sustainable development.

About Rokua Geopark

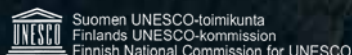
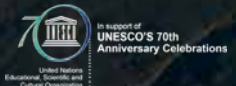
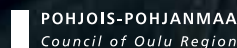
Rokua Geopark is located in Northern Finland, about 200 kilometres south of the Arctic Circle and is the northernmost Geopark in the world. The closest airport, the Oulu Airport, is situated less than an hour's drive from the Geopark. The Geopark is also easily accessible by train or car.

The Geopark's theme, Heritage of the Ice Age, reflects the territory's exceptional record of glacial deposits and landforms created during the last Ice Age. The underlying bedrock, which is up to 2.7 billion years old, includes some of the oldest rocks in Europe. Besides the geology the area has a significant cultural and biological heritage.

About Finland

Finland is a land of forests and lakes with four distinct seasons of the year. It is situated in Northern Europe bordering on Sweden to the west, Norway to the north and Russia to the east. The capital city, Helsinki in Southern Finland, has an airport with numerous daily internal flights and international flights to Asia, Europe and North America. Finland is very sparsely populated, of the five million inhabitants more than one million people live in the area of the capital city Helsinki.


The City of Oulu is the capital of northern Finland. The Oulu Region has over 200,000 inhabitants and it is the most rapidly growing region in Finland. Transport connections and times are direct and convenient, regardless of the means of transport or direction. All main roads meet in Oulu.



Join us for a great adventure

Call for papers opens in
January 2015

Conference Registration opens
February 1st 2015

 www.egnconference2015.com

 13th European Geoparks Conference