



europaean GEO PARKS

network

European Geoparks Magazine • Issue 8



Geoparks:

Learning from the Past -
Building a Sustainable Future

Celebrating 10 Years of Innovations

Foreword

Magazine 8 celebrates and provides an overview of the range of activities and achievements in the life of the European Geoparks Network between 2010 and 2011. These include the highly successful 9th European Geoparks Conference, discussions focusing on the future of the Global Geoparks Network, the activities and new developments within individual Geoparks and the expansion of the network increasing the membership to 43.

The 9th European Geoparks Conference entitled "Geoparks: Learning from the Past - Building a Sustainable Future / Celebrating 10 Years of Innovations" was held at the University of the Aegean on the island of Lesbos in Greece from 1 - 5 October, 2010. Twenty four sessions involving five themes - Geoparks and World Heritage; Research in Geoparks; Geoparks - Best practice in management, Geotourism and Education; Geo-conservation: Policy and Practice, Aspiring Geoparks; - provided the 350 participants from 41 countries with a substantial framework for lively discussions and debate. The range of subjects aimed to advance the contribution which European and Global Geoparks already make to issues such as regional development, international collaboration, and best practices in geoconservation and sustainable development as well as environmental education. The conference was followed by a visit to the unique and beautiful Petrified Forest of Lesbos Geopark. The meeting of the 11 members of the International Bureau of the Global Geopark Network included the evaluation of candidates for induction into the Network

Nineteen articles highlight the innovative approaches that European Geoparks adopt in contributing to geoconservation, education and geotourism. In these articles individual Geoparks share their experiences in working with their local communities, in communicating information about their territories and in using these interrelated activities to create enjoyable and memorable experiences for the inhabitants and visitors to their Geoparks. By sharing this knowledge the Network ensures that Geoparks will continue to progress in their roles as active centres for providing holistic views of Earth history and for raising awareness of the need to protect and conserve the natural and cultural environment.

Two Geoparks demonstrate the use of art to connect nature and people. During the Geoquest event in the English Riviera Geopark three artists, the Geo-trio, shared and explored their experiences of the Geopark by interacting with the community and through a series of evening walks and theatrical shows. Bergstrasse Odenwald Geopark together with their partners The Global Geopark Mt. Lushan describe the outcomes of a cooperative project in which a group of artists created unique art installations along "The Poetic Forest Trail" in Mt. Lushan. North Pennines AONB Geopark describes a project to preserve important historical structures associated with the area's world class mining heritage. The Geopark Harz. Braunschweiger Land. Ostfalen focuses on raising the visibility of a global extinction event 375 million years ago. Contributions from Geoparks in Austria, France, Germany, Greece, Ireland, Portugal, Scotland and Spain demonstrate how Geoparks involve communities and schools in educational projects which are innovative, informative but also entertaining. Subbetica Geopark, Spain explains its geology and the Geopark concept by marketing salt.. Italian and Spanish Geoparks include geological heritage in trails and as 'a leitmotif for linking archaeology, architecture, history and culture'.

Articles by seven new geoparks are clear evidence of the increasing importance and success of the Geoparks concept. The expansion of the network has resulted in a shift in the location of the world's northernmost Geopark from Shetland to Finland and the inclusion of a new transnational Geopark, The Novohrad - Nograd Geopark, in Hungary and Slovakia. We welcome and look forward to the continued expansion of the Geopark concept and to working with new Geoparks and their communities.

Tony Ramsay, Member of the Editorial Board



**European
Geoparks
Network
Magazine**

Issue No 8 / 2011

Published by:

Natural History Museum of the Lesbos Petrified Forest on behalf of the European Geoparks Network

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Outdoor activities in the Fforest fawr geopark - Wales

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Participants of the 9th European Geoparks Conference during the field trip at the Lesvos Petrified Forest Park

- | | | | |
|----|---|----|---|
| 04 | 9 th European Geoparks Conference & 10 th Anniversary | 20 | Sobrarbe Geopark: First Intensive Course in Geological Heritage and Geodiversity |
| 07 | The Global Geoparks Network | 21 | Naturtejo Geopark acts for a sustainable Environment |
| 08 | 10 th European Geoparks Conference 16 - 20 September 2011, Langesund - Norway | 22 | Adamello Brenta Geopark Action Plan |
| 09 | Ambassadors of the Geopark: School projects in the Eisenwurz Nature - and Geopark | 23 | Communicating partnership & global Cooperation through art: Global Geoparks Mt. Lushan, PR China, & Bergstrasse-Odenwald, Germany |
| 10 | Historic Buildings in the North Pennines European Geopark Saved for Future Generations | 24 | "What's happening in the English Riviera Global Geopark" |
| 11 | Integrated Management Strategy for Geodiversity of Andalusia (Spain). Approved by the Regional Government of Andalusia | 25 | Gea Norvegica Geopark telling stories about rocks |
| 12 | Geological Interpretation in Andalusian Geoparks
Cabo de Gata-Nijar and Sierras Subbeticas Geoparks | 26 | Fun First - Copper Coast Geopark |
| 13 | Geopark Shetland Celebrates its Spectacular and Diverse Geology | 27 | The Kellwasser Valley, pinpointing a global event 375 million years ago in the Geopark Harz. Braunschweiger Land. Ostfalen |
| 14 | Celebrating Past Biodiversity in the Lesvos Petrified Forest: "Fossils of the Aegean - Mammal Biodiversity: from the Deinother of the Lesvos Petrified Forest to the Man of the Petralona Cave" | 28 | Development of the Transboundary Novohrad-Nograd Geopark |
| 15 | A decade promoting territorial identity in Maestrazgo Geopark | 29 | Magma Geopark: Created in the past, experienced in the present and a promise for the future |
| 16 | Salt From Tethys Sea: An example of sustainable use of Geological Heritage: Sierras Subeticas Natural Park & Geopark | 30 | Basque Coast Geopark: A strong cultural identity influenced by geology |
| 17 | A New fossil site of mammal footprints in the Luberon Geopark: Research and dissemination of information to the general public | 31 | Cilento and Vallo di Diano Geopark: A territory to be discovered |
| 18 | "Via GeoAlpina" trail: Beigua Geopark's contribution to discovering the Alpine Geological Heritage | 32 | Rokua Geopark - Finland's first and world's northernmost Geopark |
| 19 | Architecture of the landscape: opportunities for new activities in the Madonie Park | 33 | Tuscan Mining park Geology and Landscape: Parco Delle Colline Metallifere Grossetane |
| | | 34 | Vikos - Aaos Geopark: Landscape, nature and culture in perfect harmony |
| | | 35 | Geopark Conferences |



9th European Geoparks Conference & 10th Anniversary

Delegates
attending the
9th European
Geoparks
Conference

The sunny skies and blue waters of the Aegean Sea provided the perfect setting for the 9th European Geoparks Conference which was held on the island of Lesbos in Greece October 1-5, 2010.

The conference, entitled "Geoparks: Learning from the Past - Building a Sustainable Future / Celebrating 10 Years of

Saudi Arabia and Chile.

The 9th European Geoparks Conference occurred under the aegis of UNESCO with the approval of the General Secretary I. Bokova. It was organized by the Natural History Museum of the Lesbos Petrified Forest and the Geography department of the University of the Aegean, with the support of the Greek Ministry of Culture and Tourism and the Secretariat General for the Aegean and Island Policy. The conference was held at the University of the Aegean and included 24 sessions with the following themes:

Environmental education was also considered together with issues involving interpretation and communication, the development of nature tourism, educational programmes on abiotic nature, climate change adaptation, local participation, research in geoparks, and best practices in management, geotourism and education. This was followed by sessions which considered geo-conservation: policy and practices, evaluating earth heritage, geoparks and fossils.

The conference closed with symposia on glacial and peri-

The delegation
of Ningde
Geopark, China
in front of the
Municipal
Theatre of
Mytilene at the
opening of the
9th European
Geoparks
Conference

"Geoparks: Learning from the Past - Building a Sustainable Future / Celebrating 10 Years of Innovations"

Innovations" marked the energetic decade of the existence of the European Geoparks Network. A record number of 350 participants from 41 countries descended on the island to attend the wide selection of sessions, symposia and cultural events. These countries included England, Spain, Austria, France, Germany, Greece, Italy, Ireland, Kosovo, Croatia, the Netherlands, Hungary, Norway, Sweden, Romania, Poland, Portugal, Slovakia, Slovenia, the Czech Republic, Finland, Russia, Ethiopia, Australia, Vietnam, Brazil, Indonesia, India, Iran, China, Korea, Malaysia, Uruguay,

- Geoparks and World Heritage
- Research in Geoparks
- Geoparks - Best practice in management, geotourism and education.
- Geo-conservation: Policy and practice
- Aspiring Geoparks

These sessions provided the framework and platform for informative presentations and lively debates on issues such as: a global strategy for geoconservation and sustainable development; principles of geopark development and the contribution which European and Global Geoparks can make to regional development; international collaboration, and best practices in geoconservation and sustainable development.



P. Mc Keever during his introductory speech on EGN 10th Anniversary at the opening session of the 9th European Geoparks Conference at the Municipal Theatre of Mytilene



glacial geoparks, coastal, mining, volcanic and tectonic- alpine geoparks.

During the conference 11 new members were warmly welcomed into the Global Geopark Network which now has a membership of 77 Geoparks from 24 countries. The new geoparks include the Stonehammer Geopark (Canada), Leye-Fengshan Geopark (China), Ningde Geopark (China), San'in Kaigan Geopark (Japan), Jeju Island Geopark (Korea) and Dong Van Karst Plateau Geopark (Vietnam). Five new European Geoparks namely: Basque Coast Geopark (Spain), Parco Nazionale del Cilento e Vallo di Diano (Italy), Rokua Geopark (Finland), Tuscan Mining Park (Italy), and the Viko-Aoos Geopark (Greece) are also included among the new members. As a result there are now 42 geoparks in the European Geoparks Network. Many aspiring geoparks also participated in the conference. Presentations were delivered by park authorities from: Latin America, Caribbean, Japan, Italy, Chile, Greece, Vietnam, Korea, Portugal, Slovakia, Ireland, Canada, France, the Netherlands, Brazil, India, Iran, Turkey, Russia, Slovenia, Poland, and Nicaragua.

The opening at the Municipal Theatre of Mytilene was attended, among others, by N. Sifounakis, the Deputy

Greek Minister for the Environment, Energy and Climate Change, who in his address referred to a geopark's ability to "study the past and see into the future". M. Patzak, as a representative of UNESCO, stated that the operations of the EGN function as a role model for the development of new networks on more continents. J. Charvet of the International Union of Geological Sciences asserted that geoparks are an excellent opportunity for cooperation between the scientific communities and the local communities to promote the natural resources and stimulate the local communities. P. McKeever referred to the Lesvos Petrified Forest as a successful example of a European and Global Geopark. Also in attendance were P. Paterellis, vice Mayor, N. Soulakellis, vice Rector, and T. Badman, Head of the World Heritage Programme of the International Union for Conservation of Nature.

In addition to the presentation and discussion of various issues of best practices in geoparks, delegates were able to go and see these principles in action when they visited the Lesvos Petrified Forest Geopark. During the field trip they visited the Natural History Museum of the Lesvos Petrified Forest where they were familiarized with the museum's operations and

activities which include research, fossil conservation, environmental education, natural monument promotion, and geotourism and its effect on the development of the local region. The latter issue was highlighted in the welcome address delivered by the head of the local council of Sigri, Mr. A. Athanasiadis. The delegates went on to enjoy a bumpy ride on the Seismic Platform,

Participants of the 9th European Geoparks Conference standing in front of a cluster of standing silicified pine tree trunks during the field trip at the Lesvos Petrified Forest park



a new educational tool which the museum has installed in its efforts to increase public awareness of seismic hazards. The delegates were also impressed by the electronic guide system, the use of which is free for museum visitors.

In addition to the Lesvos Petrified Forest Geopark and its many protected areas of fascinating fossil finds, the delegates visited many geological sites such as faults and volcanic geotopes (the volcanoes of Lepetymnos and Vatoussa and the volcanic centers in Ordymnos, Eressos and Mesotopos). Stops on this excursion around the island included the ancient temple of Messon, the Museum of Industrial Olive Oil Production in Lesvos in Agia Paraskevi, the Taxiarchis monastery in Mandamados, the Molyvos volcanic dome and castle, as well as the volcanic neck with the Sweet Kissing Virgin church at its peak in Petra, and some of the Byzantine monasteries of Lesvos. The conference dele-



More than 200 works presented during the conference. S. Giraud presenting the Reserve geologique Haute Provence - France



Rokua geopark delegation receiving the EGN membership certificate by the Greek Minister of Environment N. Sifounakis



The delegation from Jeju island Geopark, Korea, celebrating its inscription in the Global Geoparks Network



gates' visits to some of these sites were enhanced by the delicious flavours of the local cuisine provided by the local agrotouristic women's cooperatives..

Not to be forgotten are the sounds of the island. Delegates will remember the magical evening at the castle of Mytilene where the audience was serenaded by the strings of the hammered dulcimers as the moon rose over the castle walls.

The 9th European Geoparks Conference has marked a successful decade of apply-

ing and living with the geopark concept which melds the natural landscape and the lives of its resident communities into a harmonious and mutually beneficial mode of existence. The next decade will be a challenging one as the network continues its energetic growth and the concept is embraced by more and more communities and governments, but this will also involve hard work in maintaining and refining the geopark approach across the planet. Onwards and upwards!

The members of the GGN Bureau discussed the new GGN applications during the meeting in Lesvos



GLOBAL NETWORK

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The Global Geoparks Network Bureau Meeting



A marathon session of the 11 member International Bureau of the Global Geopark Network (GGN) occurred on Sunday, 3 October 2010, alongside the 9th European Geoparks Network Conference. In the senate room of the University of the Aegean, advisors met to discuss a range of issues concerning the future of the Global Geoparks Network. Discussions focused on the directions for the network's operations and coordination over the next decade so that the on-going protection and promotion of global natural heritage continues to meet new challenges. The International Bureau of the Global Geopark Network (GGN) include Dr. M. Patzak (UNESCO, GGN secretariat), Dr. C. Simpson (IUGS - International Union of Geological Sciences), Dr. T. Badman (IUCN - International Conservation Union), Assoc. Prof. N. Zouros (EGN - European Geoparks Network), Dr. P. McKeever (EGN), Prof. I. Komoo (APGN - Asia-Pacific Geoparks Network), Prof. Zhao Hun (APGN), Dr. M-L. Frey (GGN Advisor), Dr. G. Martini (GGN Advisor), Prof. Long Changxing (Chinese Academy of Science), S. Giraud (EGN Secretariat), and D. Gorfinkiel (UNESCO Uruguay Office).

The Bureau also evaluated candidates for induction into the GGN. Eleven new members were found to fulfil the requirements of operating geoparks according to the high level of specifications demanded. The new geoparks are the Stonehammer Geopark (Canada), the first geopark in north America, Leye-Fengshan Geopark (China), Ningde Geopark (China), San'in Kaigan Geopark (Japan), Jeju Island Geopark (Korea) and Dong Van Karst Plateau Geopark (Vietnam). Among the new members are also 5 European geoparks, namely: Basque coast Geopark (Spain), Parco Nazionale del Cilento e Vallo di diano (Italy), Rokua Geopark (Finland), Tuscan Mining Park (Italy), and the Viko-Aoos Geopark (Greece). As a result there are now 77 geoparks in the Global Geoparks Network! A ceremony in the amphitheatre of the Geography department of the University of the Aegean marked the announcement of the 11 new member geoparks in the GGN. The new members were presented with a special certificate of membership by the representative of UNESCO Dr. M. Patzak and the members of the Global Geoparks Bureau.



The delegation from Dong Van Karst Plateau Geopark, Vietnam, receiving the GGN membership certificate.



The delegation from San'in Kaigan Geopark Japan, receiving the GGN membership certificate



The delegation from Parco Nazionale del Cilento e Vallo di diano (Italy), receiving the EGN membership certificate by the Greek Minister of Environment N. Sifounakis

10th European Geoparks Conference

16 - 20 September 2011, Langesund - Norway

Gea Norvegica Geopark in Norway is pleased to invite you to participate in this conference. The conference will be held in Langesund, a small village on the coast of Telemark, from the 16th -20th September 2011. We will be together for five days, sharing good ideas on geoparks, learning from each other's experiences and discuss important Geopark issues. The two last days of the conference will be devoted to field trips.

The main theme of the conference is "Sustainability through Knowledge - Communicating Geoparks". Communication on different levels to a variety of people is essential and the Geopark messages need to reach a broad audience in order to achieve the aims of the Geopark concept.

Topics for discussion will include:

The presentation of new Geopark projects, issues concerning the development of Geoparks and the Global Geoparks Network and regional development. Aspiring Geoparks should take this opportunity to present their Geopark, to introduce themselves and to be inspired by the work of other Geoparks throughout the world. There will also be presentations on "best practice" from various Geoparks, and lectures addressing both the European and the Global Geoparks Networks.

Telling the stories, informing, educating, creating good and memorable experiences is all about interpretation and communication. Whether they are conveyed through information panels, leaflets, guided tours, information centres or interpretation centres, we all use these means of communication. Sharing good - or perhaps not so good - experiences or presenting new ideas and approaches will all be addressed here.

Geo-conservation and sustainable development including World heritage, global strategy, local participation and policy and practice are important issues for all Geoparks. The importance of taking care of our common heritage is obvious to us, but not necessarily to all other collaborators including stakeholders, politicians, or management partners. The strategy for conservation, for developing the sus-

tainable use of our geo-heritage, might vary from Geopark to Geopark.

The concepts of education and research are also important tasks for Geoparks. Education at all levels, ranging from small children to students of science in different fields, will be discussed. We will also include papers on research in Geoparks and adaptation to climate change.

Geo-tourism is a concept that is beginning to take hold in many parts of the world, yet the general understanding of what geo-tourism entails may vary. We will consider "best practice" in developing and promoting this concept while at the same time incorporating the goal of sustainable development. Geo-tourism can provide exciting possibilities for local development in all Geoparks.

Geoparks should also play an important role in local development and create economic benefits for local communities. Promoting Geoparks and their marketing strategies is important for the development of geo-tourism and the development of local businesses. The development of quality product brands will make it possible to market Geoparks in the best possible way. Examples of the kinds of quality brand products that Geoparks could promote include agricultural products and handicrafts, as well as fantastic nature experiences.

The European and the Global Geoparks Networks are growing and there are Geoparks on most continents. The idea of collaboration is important, and we will discuss support and the many different kinds of cooperation that are possible. Areas of cooperation are diverse; today's Geoparks work together on educational issues, scientific research, marketing strategies, sustainable development, the process of protecting our global geological heritage, and others. Maybe even new topics will be identified?

Please check our homepage for more information on the conference, or contact Gea Norvegica Geopark:

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The "Devil's Church". Protection and joint maintenance of nature by students and local organisations

The protection of nature and the geological heritage is not a job which we can delegate to an outside body and then relax. In addition to legal measures, the combined and continuous efforts of officials, conservation agencies, visitors and communities are needed to preserve this heritage. This can only be achieved by raising awareness in all involved groups. Crucial in all respects is the cooperation between those who live in the Park area. Children especially play an important part in raising this awareness. They are curious and open to experiences which stimulate their imagination and are happy to communicate their experiences to their families, relatives or friends. Cooperation with local schools is therefore essential for a prospering Geopark and Eisenwurzen Geopark has achieved this through a three-fold approach: (1) By including basic information on the Park in the syllabus, (2) engaging in field trips and projects with the students and (3) through annual training courses for teachers. As a consequence of these efforts three schools within the Nature Park have officially been awarded the accolade "Austrian Nature Park School". Currently, other schools are preparing to fulfill the criteria for receiving this award and will apply in the near future.

Encouraging students to experience the fascination of geology and to explore the natural environment and the history of the native region was the idea of a common action by the Eisenwurzen

Park in 2009 - 2010. Unexpectedly, all schools from the region joined the project. Within ten months, 17 schools with 656 students ranging in age from 6 to 17 planned and engaged in 20 detailed projects and numerous field trips. The creativity of the students was absolutely breathtaking. A video and a brochure produced by each group documented the wide range of activities. Each group was scientifically supported by a mentor. Two examples illustrate how these results were achieved:

The Secondary Modern School of Weissenbach chose the theme "Protection of Monuments of Nature". The project was linked to the "Devil's Church", a partly collapsed cave and Natural Monument located within the community boundaries. According to an old myth, the devil has - obviously successfully - convinced inhabitants to feast with him in this cave instead of attending Sunday service. Actively supported by the St. Gallen branch of the Alpine Club, the local Club of Pensioners and the Styrian Provincial Forest Administration a new hand-rail was installed and garbage was cleared from the cave and the trails. The students visualized the myth of the cave in a special workshop. Pictures, diabolic masks and comics were produced. Texts, infernal sounds and, last not least, the special treat of a "devil's delights", which was highly appreciated during the final event, were created.

Under the heading "An experience for all senses" the project of the Primary School of

Gams was the Kraus Cave which is the largest gypsum-bearing cave in Central Europe. The first stage was to explore the cave together with the speleologist who was mentoring them. Having been suitably impressed they start-

School projects in the Eisenwurzen Nature - and Geopark

ed to install their own Kraus Cave at school. A model of the cave was made and wooden boards with questions concerning the cave were attached on the outside. The answers to these questions were given on the reverse sides of the boards.



The children's Mini Kraus Cave attracted many visitors at the final event

Needless to say the model was one of the highlights of the final presentation. The grand finale consisted of a feast in June 2010. Having been attended by some 900 students, teachers, parents and relatives it was by far the largest public performance of schools we have yet organized. Each school presented its project with highly acclaimed games, panels, food stands theatrical performances and dances. Visitors and actors had much fun and there was a delightful atmosphere. This showed us that in addition to all the fun, children are ideal ambassadors for spreading the idea of the Geopark. This was confirmed by the publicity generated in the media.

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Ambassadors of the Geopark

ACTIVITIES

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Historic Buildings Saved for Future Generations

Work has now been completed to protect four of the North Pennines European Geopark's most iconic historic structures, including two buildings intimately associated with the area's world class lead mining heritage.

Centuries of icy weather have taken their toll on the Scheduled Ancient Monuments of Shildon Engine House, Ninebanks Tower, Muggleswick Grange and the remains of Whitesyke and Bentyfield Lead Mines.

The Geopark managers (the North Pennines Area of Outstanding Natural Beauty (AONB) Partnership) have used funds from the UK's Heritage Lottery Fund and English Heritage (the

Government advisory body on the historic environment), to employ specialist contractors to survey and consolidate the ruins of these buildings. This conservation work, coupled with new interpretation work in progress by the Geopark team, will enable visitors to get a flavour of the times in which these structures were built and the lives of the people who built and used them.

According to Jon Charlton of the North Pennines AONB Partnership, "These buildings taken together really tell the story of the North Pennines and how our ancestors down the ages lived and worked in the area. Over time they would have crumbled and disappeared completely; we wanted to protect what remains so that we and future generations can see these legacies in the landscape of what it was like to live those

past lives. We are proud to be working or partners to help the building owners save these irreplaceable pieces of heritage."

As part of the continuing work on these historic structures, archaeologists are expecting to uncover some fascinating new insights into the ways the buildings were used and their significance in the wider context.

Paul Frodsham, Historic Environment Officer with the AONB Partnership said: "The North Pennines landscape is renowned for its lead mining heritage, and while the remnants of the lead industry are incredibly important, the Geopark's historic environment consists of much, much more. The 13th Century remains of Muggleswick Grange, for example, are a really important historical link between the North Pennines and Durham Cathedral (now a World Heritage Site). Archaeological investigations are being undertaken in association with consolidation work at Shildon, Muggleswick, Ninebanks and Whitesyke, and this will add substantially to our understanding of North Pennines history."

Skills Training

As the consolidation work progressed, there were both taster days' and week-long opportunities for local people to train in the traditional skill of lime mortar pointing, now used extensively in the conservation of historic buildings.

Buildings in Focus - Shildon Engine House and Whitesyke Mine

Shildon Engine House was built around 1805 to house a Cornish style pumping engine which protected the network



of lead mines operating underneath from flooding. Following decommissioning, the engine house was converted to provide accommodation for mining families. It was finally abandoned around 100 years ago and has been derelict ever since. The Engine House is a dramatic reminder of a once thriving lead mining community of 170 people. The population declined after the mid-1800s when cheaper lead began to be imported from abroad, and young Shildon families emigrated to the gold mining areas of Australia and America.

The Geopark team's work includes the clearance of vegetation, consolidation of loose stonework, capping of the mineshaft and the provision of on-site interpretation.

The remains of the 19th Century lead mine complex at **Whitesyke and Bentyfield Mine** lies in the remote and beautiful South Tyne Valley, and once formed part of an extensive complex of more than 100 lead mines operating in the area during the 18th and 19th Centuries. The remains include a mine-shop, a dressing floor and several mine level entrances. The Geopark team's work includes detailed recording and selective consolidation of structures and the provision of geological and lead mining interpretation.

Elizabeth Pickett

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Conserved for the future: Shildon Engine House near Blanchland, Northumberland © NPAP/Elfie Waren

in the North Pennines European Geopark



Integrated Management Strategy for Geodiversity of Andalusia (Spain)

ACTIVITIES

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The Strategy for Geodiversity in Andalusia is one of the first initiatives in Europe for crystallizing a Government's interest in the legal protection and integrated management of its geological heritage. The document contains 97 actions aimed at strengthening the protection of the geological heritage and developing its potential for sustainable development.

The Government Council has adopted the Andalusian Strategy for Geodiversity Integrated Management, which defines measures for protecting and exploiting the economic, tourism, educational, scientific and cultural potential based on the regional geological heritage. This heritage, currently consists of 588 sites listed in the Georesources Inventory of Andalusia (IAG).

The strategy document, which is valid for a period of eight years, contains 97 actions to ensure conservation of the sites; to promote their sustainable use; to create an integrated business model; to promote the institutional participation of Andalusia in international programs such as Geosites or Geoparks; and to develop environmental education programs and disseminate the values of geodiversity in Andalusia. Included in the

actions are: the enhancement of cooperation agreements with landowners; the creation of a network of interpretation centres and information points; the definition of specific legal procedures to control the use of and activities within site; the creation of a regional data base and the development of a local products catalogue related to the geodiversity.

The strategy will also develop a group of measures focusing on the incorporation of protection and assessment criteria for geological heritage on territorial, urban, touristic and environmental planning tools, as well as on rural development projects financed from European and National funds.

Many of the inventoried sites are inside protected areas which have been recognized for their geological values. Examples include the Gypsum Karst of Sorbas and Tabernas Desert (Almeria), the Cuenca del Rio Tinto (Huelva), the Torcal de Antequera (Malaga), Sierra Norte (Sevilla) or Despenaperros (Jaen).

In addition to strengthening the conservation of the geological heritage, already guaranteed by regional legislation, the Andalusian Strategy for Geodiversity emphasizes the potential use of this heritage

Approved by the Regional Government of Andalusia

for initiating socio-economic initiatives on sustainable rural development, especially in the tourism sector. The document approved on the 6 October 2010 by the Government Council contains contributions from administration bodies, rural development groups, local development agencies, social organizations, museums, universities, research centres, scientific and technical institutions and businesses and tourism promoters.

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The karst landscape at Cerra del Hierro

Geological Interpretation in Andalusian Geoparks

The Andalusian Ministry of Environment, has completed the first edition of the project "New Trails in Andalusian Natural Parks". This initiative, undertaken by a multidisciplinary team, represents the first step in standardizing the existing trails with the

along these trails. Through very clear texts and drawings, people will be able to understand the essential features of the Geology of the Park. These initiatives serve as examples of the continuous effort by the Andalusian Ministry of the Environment towards including the "Integrated Management Strategy for Geodiversity in Andalucía" in its general projects and in areas already designated as Geoparks, e.g. Sierras Subbéticas, Cabo

de Gata-Nijar, or those areas that are applying for membership of the EGN, such as Sierra Norte, in Seville or Rio Tinto in Huelva.

This innovative publication includes a revised and improved map for each trail, comprehensive information on how to reach the trail, available services such as public transport, parking and nearby tracks.

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Cabo de Gata - Nijar & Sierras Subbéticas Geoparks

Andalusian Mountaineering Federation in order to promote this public facility and extend its scope on an international level.

In the case of the two Andalusian Geoparks the EGN logo was included on the trail documents and, in both areas close collaboration with the scientific staff resulted in updating and enhancing the geological heritage component of trails within these unique natural areas. Twenty one trails have been updated in the the two Geoparks (15 in Cabo de Gata-Nijar and 8 in Sierras Subbéticas). Several interpretive panels focusing on the geological heritage, written in two languages, are being installed

BUENAS PRACTICAS

- Quitar la basura de contenedores
- Conducir con cuidado
- Respetar los caminos y senderos privados
- No se permite la caza de animales
- No se permite encender fuego
- No se permite fumar
- No se permite la recogida de flora

Teléfono de emergencias: 112

ALMERÍA

MÁS INFORMACIÓN:
Centro de Estudios Los Alcazares
Ctra. Al. 3013 Almería-Cabo de Gata, s/n 7. Almería, tel. 952 16 01 13
www.verdaderosdelosatares.es

TRAYECTO
Lineal

LONGITUD
2,8 km

TIEMPO ESTIMADO
1 hora

DIFICULTAD
Baja

TIPO CAMINO
Carril

PAISAJE/VEGETACIÓN
Terreno relativamente accidentado entre cerros y depresiones de origen volcánico. Vegetación esteparia salpicada de vistosas matas de palmito, esparto, albalda, cornical u otras propias de la región o introducidas, como pitas o chumberas.

SOMBRA
Escasa

AUTORIZACIÓN ESPECIAL
No es necesaria

RECOMENDACIONES
Llevar agua potable y vestimenta y calzado adecuados.

CALDERAS VOLCÁNICAS
El origen volcánico del cabo de Gata se manifiesta en la estructura del relieve, como en otros muchos detalles. Uno de sus formaciones geomorfológicas características son las calderas volcánicas, que se forman al producirse un hundimiento de la cavidad magnética, generalmente al quedarse vacía, aunque también se puede deber a otras razones.

El resultado es una depresión del terreno rodeada por una pared o elevación en forma circular, que el propio nombre -caldera- ejemplifica con acierto. Hay calderas de este tipo de gran fama mundial, como la del Ngongoro en Tanzania, varias en las Islas Galápagos o las de las Islas Canarias (de Las Cañadas del Teide y la de Taburiente). También las formadas tras erupciones más recientes, como la del Krakatau en Indonesia o la del Pinatubo en Filipinas.

El Paleokarst de los Pelaos

PARQUE NATURAL Sierras Subbéticas

Sendero Caldera de Majada Redonda

Sendero Rio Alias

Sendero Las Amaladeras

Exploring the volcanic landscape of Eshaness and - inset - posters developed by the pupils



Geopark Shetland

Inspiring enthusiasm for Shetland's dramatic and diverse geology is one of the key aims of Geopark Shetland and awareness of Shetland's geology and its strong links with the natural and cultural heritage of the islands is steadily growing.

The Geopark celebrated European Geoparks Week in partnership with the increasingly high profile Shetland Nature Festival, and worked closely with the Scottish Geology Forum in the delivery of events for the Scottish Geology Festival. Through talks, walks, family activity days, and a popular annual Geology Course, delivered by the Geopark Shetland endorsed 'Shetland Geotours', the Geopark message is spreading.

The recent introduction of the new Curriculum for Excellence in Scottish schools challenged Geopark Shetland to find ways of best supporting this approach to education, with its emphasis on cross-curricular working. In 2009 the Geopark became one of the founding members of the Shetland Environmental Education Partnership - a forum for local environmental organizations to work together on educational projects and ideas. ShEEP collaborated on a schools information folder, detailing the education activities offered by all members and their links with the cur-

riculum and ShEEP now has an active presence on 'Glow' - the national schools intranet for Scotland.

May 2010 saw the inaugural 'ShEEDIP' (Discover Interesting Places) event, which will now be an annual activity. Over 100 children from 6 schools took part in two days of activities to promote outdoor learning and environmental awareness and the event was voted a big success in a show of hands from all participants.

Geopark Shetland held workshops and activities at several primary schools. One event was arranged by the pupils themselves, who were inspired by the eruption of Eyafjallajokull in Iceland. Other site visits and activities, tailored to pupils with special needs, were delivered as part of a Council operated playscheme. Most notably, the Geopark worked closely with High Schools and teachers from Lerwick and Unst (Britain's most northerly island), to develop a teaching unit and a two day field trip focusing on the volcanic landscape of Eshaness.

The field trip, described by one pupil as 'epic!', was based around 'Shetland's volcano'-one of the Geopark Shetland self-guide trails series. Pupils explored the formation of parts of the Eshaness Peninsula through scientific investigation, group discus-

sion, and even beach art! In the evenings they ascended the granite of Ronas Hill - Shetland's highest point - and made an exciting journey through the 'Land of Rock' with climber Pete Richardson. Participating pupils were awarded a John Muir Award in recognition of their awareness and responsibility for wild places. They explored curricular themes of Citizenship and Sustainability as they considered the economic importance of Shetland's geology as part of a growing tourist industry, and how best to conserve this geological heritage. Building on this success, another taught unit and field trip in 2011 will explore the links between geology and biodiversity in Unst. Pupils will generate podcasts to share their knowledge and experiences with the wider public. Anderson High School in Lerwick has been participating in the Scottish Schools Seismology project. Custodians of their very own seismometer, students have formed an 'Earthquake Watch' club and have been commended on the data they have collected by the British Geological Survey. For more information visit www.geoparkshetland.org.uk

Celebrates its Spectacular and Diverse Geology

For more information visit www.geoparkshetland.org.uk

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ACTIVITIES
european
GEOPARKS

Discovering the properties of Shetland Rocks as pupils make siltstone knives at ShEEP DIP



Celebrating Past Biodiversity in the Lesvos Petrified Forest

Palaeontology is a popular science and the remains of extinct organisms usually impress people and especially children.

"Fossils of the Aegean - Mammal Biodiversity: from the Deinothere of the Lesvos Petrified Forest to the Man of the Petralona Cave"

But how can we explain the importance of the occurrence of fossils and vertebrate remains, including the bones and teeth of extinct animals, to visitors to our Geoparks?

How do they enable us to interpret the past?

In order to demonstrate the past biodiversity in the Aegean region, and as a contribution to celebrating "2010 - International Year of Biodiversity", the Natural History Museum of the Lesvos

Schoolchildren participate in educational programmes which help them to learn about the past biodiversity through fun activities



Petrified Forest organised the temporary exhibition "Fossils of the Aegean - Mammal Biodiversity: from the Deinothere of the Lesvos Petrified Forest to the Man of the Petralona Cave". The exhibition, from July 2010 to August 2011, was complemented by educational programmes for children of all ages. It presents fossils of 40 mammals which lived in the the Aegean region during the past 23 million years, including huge mastodons, scary machairodonts, three-toed horses, long- and short-necked giraffes, small hippos and dwarf elephants. All of these fossils are the property of the Museum of Geology and Palaeontology (University of Thessaloniki), the Natural History Museum of Crete, the Natural History Museum of Milia Grevenon, and the Municipality of Rethymnon.

The tropical and subtropical forests, dry savannahs and frozen tundra that successively covered the Aegean area and provided environmental niches for the animals on display are presented through reconstructions, whereas videos illustrate the way in which excavation techniques are used to recover these fossils.

Each fossil is illustrated by a poster with an interpretation of the technical information published in scientific journals and, more importantly, provide the description of the animal and its habits based on illustrations derived from text books on palaeontology. Laypersons would find it difficult to interpret and visualize



the nature and appearance of animals only on the basis of fossil remains. Furthermore, the information presented focuses on the interpretation of various morphologies of the teeth and bones of the four main orders of large mammals including carnivores, odd toed hoofed mammals (perissodactyls e.g. horses), even toed hoofed mammals (artiodactyls e.g. pigs and hippopotamuses) and proboscideans (e.g. elephants). This constitutes the key to understanding the link between an animal's anatomical features and lifestyle, and of mammalian evolution and adaptation of animals to a constantly changing environment.

The exhibition was visited by many tourists, local people and schools of the island of Lesvos. Through activities appropriate to their individual levels of knowledge, children learned about past faunas and ecosystems and about the importance of the Aegean region for the study of past and present biodiversity, as well as about the mechanisms of evolution on our planet.

Impressive fossils from excavations all over Greece are presented in the exhibition

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A decade promoting territorial identity in Maestrazgo Geopark



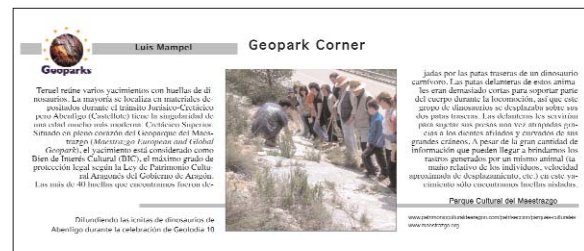
The new facility for visitors in Las Cerradicas dinosaur footprint site in Galve

Following ten years of work, outstanding results have been achieved in the protection of the geological heritage and raising public awareness in the Maestrazgo Geopark. A project initiated in 2005 at Las Cerradicas dinosaur fossil footprints site in Galve, has resulted in new facilities for visitors. After careful preparation and conservation of the fossiliferous strata, a roof and an observation platform together with panels explaining the characteristics of the site, were installed by the Aragon Government in 2010. Also, several new Lower Cretaceous dinosaur fossils have been discovered by the palaeontologists from Dinopolis in the Galve clay quarry. These achievements have been discussed in international specialised meetings. Also in 2010, guided visits to the geological resources of the Geopark were organised for the "Palaeontology & Development" course of the Summer University of Teruel, for presentation at the 16th Symposium on Geology.

Teaching and were also included in the special post-conference fieldtrip of the First Meeting of ProGEO Regional Working Group SW Europe. Palaeontologists visited and introduced palaeontology to schools within the Geopark during European Geoparks Week. Geolodia was celebrated in Abenfigo, where about forty tridactyl footprints, attributed to theropod dinosaurs, are visible in a layer of Upper Cretaceous rocks near the road to Castellote. Geolodia is the Spanish "day of Geology", an event designed for the general public. This was launched in 2005 in Aliaga and was celebrated for the first time in the whole of Spain in 2010. In addition, an introductory course aimed at local tourist agents was held in Mas de las Matas. Perhaps the most unconventional milestone among the 2010 Geopark projects for raising public awareness was the launching of a new method of networking through the creation of a

Geopark section in the local media. In the case of Maestrazgo, the provincial newspaper Diario de Teruel, has published, since 4 July 2010, a short article and a photograph of sites of geological significance or of activities in the Geopark (in paper and online editions). We invite you to send contributions - firstly to encourage the interchange of knowledge between the Geopark's stakeholders and potential visitors and secondly to foster networking between the members of the European Geoparks Network.

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Geopark Corner describing the activity Geolodia 10 in Abenfigo



Palaeontologists from Dinopolis explain the palaeontological heritage to pupils and teachers in Las Cerradicas site



The traditional harvest of salt in Subbetica

Salt from Tethys Sea

More than 200 million years ago, when the first dinosaurs walked on Earth, large amounts of salt were deposited in the warm and shallow waters of the so-called Tethys Sea. Buried by later sediments, all these deposits were dragged, folded, broken, and elevated above sea level during the Alpine phase of mountain building.

Nowadays, in Subbetica, when water seeps through the ground, it dissolves becoming slowly enriched in this ancient salt which is buried in the interior of the mountains. This dissolved salt emerges in natural brine springs that give rise to salty streams and rivers. On the boundary of Sierras Subbéticas Natural Park, close to the little village of Rute, white salt pans are surrounded by green olive groves. This unexpected landscape is part of a long story including the time when Man appeared on the scene to extract this indispensable substance. Salt exploitation in Subbetica has provided its inhabitants with the precious mineral since time immemorial, in a territory about 90 kilometres away from the nearest coast.

The Subbéticas Geopark has

An example of sustainable use of Geological Heritage from the Sierras Subbéticas Geopark

used this under-promoted product, cooking salt, to present the amazing story of the geological history of a "geological product". "Salt from Tethys Sea" is a natural cooking salt, soft and tasty, with no additives, harvested only by hand. Its exploitation is environmentally sustainable and poses no harm to the environment because it is not an extractive activity. The mineral emerges spontaneously at the surface, dissolved in water, and evaporation is achieved only through the energy source of the sun. The salt is packed in attractive 500 gram bags of natural cotton that bear a label explaining its geological origin.

The "Salt from Tethys Sea" project complies with the philosophy of the European Geoparks Network and aims to achieve the following goals, through the sustainable use of a geological resource:

- To promote local development: small local businesses benefit from their close collaboration with the Geopark, resulting in the design of touristic "geological products".
- To promote education: through the information contained in the label on the bags of salt. This explains basic geological concepts. This product is then used for environmental education in the territory, and increases the general understanding on Subbetica's geological history.
- To promote the geological heritage: This salt per-

mits enjoyment of the geological heritage through the sense of taste, its flavour and its antiquity. This helps to create public awareness of the importance of this ancient heritage.

In addition other benefits are derived from the project, such as the survival and maintenance of a traditional activity which is in danger of disappearing. The project ensures the preservation of an ethnological legacy associated with saltworks.

With each bag of "Salt from Tethys Sea" the visitor takes a product from our land, a part of our tradition, of our present and our most distant past, which is extracted with the maximum respect for Nature. This initiative helps inhabitants and visitors to understand the essence of a Geopark and the many benefits it can offer.

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A visit to San Juan de Dios, guided by the owner of this inland saltworks (European Geoparks Week 2009)



A bag of "Salt from Tethys Sea"



The public and scientists visit the excavation site

Mammal fossil footprints provide rare evidence of animal behaviour and of the existence of faunas in areas where no or few body fossils are known. In total, the world-wide record of mammal footprints is scarce, with fewer than 80 known localities.

The relatively small area of the Parc Naturel Regional du Luberon, European & Global Geopark, contains eight sites that yielded several hundred footprints. In April 2010, a scientific excavation led to the discovery of a new site. A public event was organized to share this discovery with the inhabitants of the Geopark. This quarry was already

known for the existence of early Oligocene trackways of odd-toed ungulate (hoofed animals such as horses) which occur on three different levels. The new trackway which was made by a rhinoceros was discovered in the uppermost lacustrine calcareous beds of the Calcaires de La Fayette Formation.

Given the paucity of the world's record of mammal footprints, new discoveries are always important and shed light on the faunas that lived in an area. The footprints testify to the presence of mammal faunas at a period when no or very few fossil bones are recorded and bridge the gap in the fossil record between the known late Eocene and middle Oligocene faunas. This break in the fossil record coincides with the famous Eocene-Oligocene transition when a large renewal of the European faunas, known as the "Grand Coupure", took place. The new fossil trackway discovered in spring 2010 is situated a few meters above the Eocene-Oligocene boundary, and testifies to the presence of small advanced rhinocerotids during this time interval. Interestingly it also represents one of the longest trackways in the world for odd-toed ungulates!

Following the scientific excavation, we organized to organize a "Cafe scientifique" in the village of Viens. This kind of gathering allows people to meet scientists and to speak about scientific issues in a relaxed environment.

More than 30 people came to meet the two specialists, and to talk about mammal footprints, other fossils from the Luberon area, the evolution of mammals and the geological heritage.

Afterwards, the group visited the clay quarry to view and discuss the Eocene-Oligocene sequence, the new rhinoceros trackway and other levels with footprints. This provided an opportunity to introduce the richness of the region and an understanding of aspects of geology such as sedimentation, fossilization and dating of rocks to members of the general public.

The Parc Naturel Regional du Luberon, European & Global Geopark, is a place where science is alive. Research projects involving palaeontology have already been completed and new projects are being developed for the future. For all projects, we try to build a bridge between scientists and the local inhabitants to encourage them to take ownership of their geological heritage.

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Research and dissemination of information to the general public



"Cafe scientifique" in Viens



The site during excavation



"Via GeoAlpina" trail

Introduction

During the last five years the Beigua Geopark Management Board introduced a structured network of trails, interpretation facilities and info-points to promote the knowledge of the local geological, biological, cultural and historical heritage of its territory. Among these trails, the

Beigua Geopark's contribution to discovering the Alpine Geological Heritage

Sciences by providing walkers with trans-alpine itineraries. The trail descriptions can be accessed and downloaded from the "Via GeoAlpina" (www.viageoalpina.org) or are available from the tourism offices of Nature Parks and Geoparks. Beigua Geopark contributed to the development of the "Via GeoAlpina" project by designing two geological trails.

The "Via GeoAlpina" trail in the Beigua Geopark

The route which is a few km away from the Ligurian Sea progresses in an approximately SW-NE direction at a constant altitude of about 1000 m. The approximately 20 km trail consists of two one-day walks. The itinerary developed for each trail is easily achievable by both expert and amateur hikers especially during spring. Snow and ice make these trails more difficult to walk during the winter months. Several interpretative panels positioned along the trails explain the geological and biological heritage of the area. The starting point for both walks is located in Pratorotondo, where a Geopark Info-Point provides a short account focusing on the geological features of this part of the Geopark.

The "Pratorotondo" trail

The trail begins with a wide dirt track, recently adapted for use by wheelchairs, leading to the Casa Miniera Shelter. This component of the trail coincides precisely with the Ligure-Padano watershed. The most impres-

sive geological features along the trail are the "blockfields" and the "blockstream" of Pian-fretto and Torbiera del Laione. The trail through the central plain area of Pian del Fretto crosses the blockfield front which is characterised by huge piled up masses of angular boulders.

The "Pratorotondo-Passo del Falallo" trail

The geological features of the area are associated with imposing exposures of serpentinites. These metamorphic rocks originated in the Earth's mantle and are linked with processes which led to the formation and subsequent closure of the Ligurian-Piedmontese Ocean during the Alpine orogeny. The trail allows walkers to appreciate the complex geological structure of the Tyrrhenian slope, more specifically, of the valley parallel to the sea which extends from the residential area of Sciarborasca in the west up to Arenzano in the east. The geomorphology is significant for the whole Tyrrhenian margin and is linked to the creation of the Gulf of Liguria and with the formation of horst and graben structures which was initiated during the Pliocene Epoch between 5.33 and 1.8 million years ago.

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The blockstream of Pianfretto and the associated interpretative panel

"Via GeoAlpina" launched in 2010 within the framework of the International Year of Planet Earth (IYPE) was of particular importance. Austria, France, Germany, Italy, Slovenia and Switzerland worked together to produce the trail which affords tourists and hikers of all ages an opportunity to discover the Earth's secrets by following a trail through the entire Alpine chain. The common aim was to offer an alternative and conscious way to get in touch with Earth

The Via GeoAlpina trail in the Beigua Geopark



A view of the always respected and loved landscape in the Madonie Geopark



Madonie Geopark

Architecture of the landscape: opportunities for new activities in the Madonie Park

In the year 2009 the Madonie Regional Park realized three projects, financed by the "Ministero dell' Ambiente e della Tutela del Territorio e del Mare".

These involved 120 young people from the Madonie Geopark in various activities relating to tourism, biodiversity and the natural and cultural heritage and its protection.

In addition to cultural and architectural issues all aspects of the environmental heritage were considered including geology, botany and geomorphology. Architectural and other maps were produced to illustrate the distribution of geosites, fire hazards and the architectural heritage.

In 2001 the Madonie Park was accepted as a member of the European Geoparks Network on account of its geological uniqueness and the natural and environmental beauty of the territory. The fifteen communes in the Park contain a very varied and fascinating geological heritage. The rocks and fossils found among the peaks of the Madonie Geopark reveal the story of their history from 230 million years ago to the present day. They can be used to explain geological concepts such as the birth of a mountain chain, and to reveal the nature of



A sulphur vein in the Madonie Park. This geosite provides an opportunity to consider the nature and significance of hydrothermal processes

the various organisms which populated the area through time including the fossils of animals associated with modern coral reefs. There are also sites in which the landscape provides breathtaking panoramas and areas where particular rocks are found.

The rocks and fossils which occur at sites in our territory, called geosites, reveal aspects of the Earth's history and provide new catalysts for developing tourism in the Geopark and for the Madonie communities. In collaboration with the Sicilian Regional Government, the geologists in one of our projects concentrated on the theme of geo-tourism and have produced a survey of approximately 60 geo-sites situated in the communes of

the Madonie Park.

In addition to the purely scientific attributes of geosites we must also not ignore human and historical factors and the bond that has always existed between architecture and the geology at some sites.

One senses how geology can be used as a leitmotif for constructing itineraries linking archaeology, architecture, history and culture in the Geopark, in a sustainable and eco-compatible way, allowing the tourists visiting our territory to address completely new themes and to discover the fascinating stories that nature gives us.

Geol. Francesca Quagliana, cooperator with the project 65 "Programma Triennale per la Tutela Ambientale PTTA 94-96" financed by the "Ministero dell'Ambiente e della Tutela del Territorio e del Mare". f.quagliana@virgilio.it

Sobrarbe Geopark

First Intensive Course in Geological Heritage and Geodiversity

One branch of geology that has developed considerably in recent years deals with concepts such as geological heritage and geodiversity, and their application to geotourism through outreach and education. In this

inadequately.

With the aim of providing rigorous up-to-date training and taking advantage of the best features of the Sobrarbe Geopark, the Geological and Mining Institute of Spain (IGME) and the Sobrarbe Geopark co-organized the first intensive course in geological heritage and geodiversity, which was held from 6th -10th September 2010. The course is recognized as one of the free choices of credits by the University of Saragossa. Twenty one students from various parts of Spain, mainly geologists and geology undergraduate students, attended a number of lectures and practical sessions over five days which addressed these issues. In addition to its theoretical content, the course covered numerous examples of work involved in producing inventories of geosites, conveying experiences concerning geoconservation and geotourism, raising awareness in the general public and among teachers of Earth sciences in schools and colleges . The World of Geoparks was a subject of particular interest explaining the activities of the European and Global Geoparks Networks and the Sobrarbe Geopark.

In addition, two days of field



A stop at Boltana anticline, one of the geosites of Sobrarbe Geopark

work were scheduled and accommodation for students, teachers and their classes was organized in Morillo de Tou, a small Pyrenean village resort near Mediano Reservoir which hosts the Sobrarbe Geopark partnership enterprises programme. On the first day the students were introduced to the spectacular geology of Sobrarbe, a key region in the understanding of the Pyrenees. The second day was devoted to practical exercises at different geological sites and the students visited visitor centres in the Geopark and the National Park of Ordesa y Monte Perdido. Later, the students attended workshops and presented their findings to the rest of their teammates in a series of interesting discussions.

The final assessment of the course by both the students and the coordinators was very positive and a second course is already being prepared for 2011. All information concerning the course will soon be available on the websites of the Sobrarbe Geopark (www.geoparquepireneos.com) and the IGME (www.igme.es).

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Interpreting alpine tectonics in Bielsa



respect the training provided by geology departments in schools and universities is still far from adequate, and many professionals sometimes handle these concepts

Pupils listen to some geological explanations in Torla





Naturtejo Geopark acts for a sustainable environment

The protection of Gardunha granite landscapes and geosites is a matter of concern for Naturtejo Geopark

The Naturtejo Geopark team together with its partners is developing two different methods for raising public awareness about sustainable land use and the increase of human pressure on local natural resources. The first method involves education for environmental sustainability. It interprets temporal changes in the landscape through geotourism activities and the Geopark's educational programmes. Examples of initiatives developed are the educational off-road Trans-geopark and the local school contest "Climate Change and Biodiversity" developed in 2010 with the support of the National Commission for UNESCO. But the most effective event in the territory is the Boom Festival, at Idanha-a-Nova Reservoir. This annual international dance music and art summer festival used water as its theme in 2010. This event was recognized by the United Nations as one of the ten most important environmental-related music festivals and a leader in developing sustainable solutions. In 2011 the Boom Festival was recognized as the most ecological festival in the European Festival Awards. Naturtejo Geopark also has a deep commitment to environmentally-related NGO's. Examples

include the ProTejo project which supports initiatives for the sustainable management of river waters, and the MUNN and AZU citizen movements which oppose uranium mining in the Geopark.

The second method is focused on the regional and municipal co-management of the Geopark's territory and is aimed at reducing the carbon footprint and consideration of the environmental impact of energy-related industries. Every Year 1100 GWh/ are produced in the territory through sources of renewable energy (reservoirs, wind and biomass power plants) providing electricity for 750,000 inhabitants (90,000 living in the territory), associated with a reduction in CO2 emissions by 600,000 tons. Two biomass plants and 131 wind turbines in four wind power plants represent 195 MW based on renewable sources. Naturtejo Geopark supports the project to enlarge the Gardunha wind farm in order to preserve the granite landforms. The Geopark is also contributing, decisively, to save Portas de Almourao Geomonument from a 363 million € project to build the Alvito Dam, by changing the location of the dam and becoming directly involved in the Environmental Mitigation and Remediation Programme. EDP together with Naturtejo Geopark are developing projects for valuing the natural and cultural heritage of Almourao geosite and surrounding landscape.

Idanha-a-Nova, the municipality which was designated as the best environment to live in Portugal in 2010, is supporting the development of sugar

cane crops for biofuels, replacing tobacco crops and giving a new breath-of-life to the local agriculture, which is once again producing "traditional" crops such as watermelon. Since 2004 Proenca-a-Nova municipality has developed a pioneer project in Portugal using the volunteer carbon market to create a positive balance of 36,167 tons of CO2 stored in the local forest. Credits sold can finance the management of forest and energy efficiency policies in public projects. Castelo Branco city is also a pioneer in the development of the MOBI.E national network of electric vehicles charging stations, with slow charging points which use the excess electricity produced by local wind power plants during the night. In 2010, Naturtejo Geopark was awarded the National Environment Prize by the Federation of National Environment Associations, and the Gold Medal of Tourism Merit, by the Secretary of State for Tourism, for its commitment to establish a balance between the protection of the environment and the sustainable management of economical activities.

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Boom Festival is a sustainable music and art event. 115,000 litres of local bottled water was consumed by 20,000 people from 70 countries

Visit to the new viewpoint of Portas de Almourao with the secretaries of the state of the environment and tourism, and the directors of the Electricity of Portugal for the signing an agreement to protect the geosite





Left: Tourists walking on Lares Glacier attending a didactical activity in the Park

Right: ...Studying "Megalodon", the guide fossil of the Dolomia Principale

Adamello Brenta Geopark

Action Plan

Due to the nature of its geological heritage, a policy for sustainable development implemented through the European Charter for Sustainable Tourism, and an agenda involving environmental education, training and scientific research activities, the Adamello Brenta Nature Park became a member of the European Geoparks Network in 2008.

Safeguarding and exploiting the value of a geological environmental heritage represents an important challenge and a considerable commitment requiring an adequate action plan. For this reason the Geopark has produced an action plan to develop a programme designed to:

- support and encourage the identity of the Adamello Brenta Geopark during its start-up phase;

- improve its performance;
- ensure the revalidation of the Geopark following 4 years of membership of the EGN.

In addition to providing a guideline for the implementation of a 4- year programme, the action plan defines a comprehensive programme as part of the activities of the EGN which, if necessary, can involve applying for funding for projects (.e.g. INTER-REG).

In particular the action plan will have to pursue the following goals:

- a balance between different sectors such as conservation, research and development;
- identification of the actions to be undertaken in the Geopark area and definition of the priorities;
- resources planning.

The action plan is divided into three strategic components: conservation, scientific research and interpretation. The promotion of the geological heritage through various forms of communication, including the media, represents an important tool for ensuring the conservation and protection of the geological heritage.

Interpretation tools include the new "Guided Geo-footpaths", which can involve guided walks, a guide book of walks and interpretative panels. The Geopark's mascot is used for explaining the geology of the Adamello Brenta Geopark to children and the provision of a virtual tour allows visitors to fly over the mountain groups of the Geopark. Scientific research



in the Geopark involves effective cooperation with the Geological Society of Trento and the Tridentino Museum of Natural Sciences. A long term, robust, realistic and inclusive action plan is an important instrument for the development of such a complex organization as the Adamello Brenta Geopark.

Schoolchildren in front of giants' pots studying the geomorphology of the Geopark



The Action Plan must provide a source of reference for implementing the strategic components of the Geopark in order to ensure its continued development.

Thanks to the action plan, the strategic importance of the Geopark has Adamello Brenta Nature Park has been officially acknowledged and the main actions planned will be included in its Annual Management Programme.

The action plan can be downloaded from the Park's website: www.pnab.it/en.

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Geotourist in front of an interpretive panel telling the story "To the discovery of the passed Glacier"

Students observing the Nardis waterfalls, within an extraordinary example of hanging valley, during the Park's environmental project "One day on the Park: geology and geomorphology of Genova Valley"



Left:
"The temple of
light" by Jens
Meyer
(Germany)



Right:
The mushroom
bench" by Ping
Qiu (PR China/
Switzerland)



Communicating partnership & global cooperation through art

Cooperation is one of the most important tasks for the 77 members of the Global Geoparks Network (GGN). For this purpose the Global Geoparks Mt. Lushan (PR China) and Bergstrasse-Odenwald (Germany) implemented a partnership contract in September 2007, which includes a wide range of issues such as the development of geotourism products, management, visitor services, infrastructure, geo-education and public information.

Since 2007, both territories have initiated projects and exchange visits to develop the different areas of partnership. This includes Geopark workshops, the erection of friendship rocks in both territories together with information panels, Geopark exhibitions in Bergstrasse-Odenwald (Germany), Mt. Lushan (PR China) and Langkawi (Malaysia), in addition

to producing publications and delivering joint presentations during international conferences.

The latest cooperation project occurred during September and October 2010 in the Global Geopark Mt. Lushan, and included the International Forest Art Association (IFA), which is a partner of the Bergstrasse-Odenwald Geopark.

Since 2002, the IFA has implemented six Forest Art trails in Europe and the USA and has worked successfully with more than 100 artists from all over the world. The work is documented in bilingual (German/English) catalogues for each Forest Art trail, as well as on a comprehensive website (www.waldkunst.com).

Hosted by the Global Geopark Mt. Lushan, the IFA invited twelve artists from six countries in September 2010 to create their special art installations directly onsite along the yellow dragon trail in the forest of Mt. Lushan. Observed by visitors and tourists, the artists worked together for three weeks and developed their unique views of this natural and cultural site - their personal impressions of "The Poetic Forest". The trail was opened on the 12th of October, under the framework of the 3rd International Forest Art Conference. This was held in conjunction with the 2nd Mountain Conference and included 150 Participants from all continents. During the conference and the opening of the Forest Art trail,

artists, scientists and practitioners from all over the world exchanged their approaches to communicating the link between arts and nature. The "Poetic Forest Trail" has opened a new aesthetic and philosophical view concerning the holistic connection between art, nature and people. Meanwhile, the trail has been visited by more than 200,000

people, and is considered as a new highlight in the Global Geopark Mt. Lushan. The Trail as well as the conference is documented on a special web page in English and Chinese (www.forestartchina.com). The production of a catalogue in three languages (German/English/Chinese) is in progress and will be published in 2011.

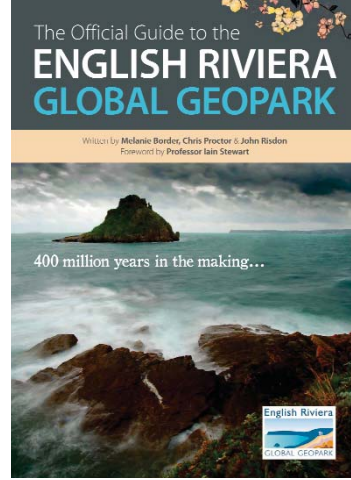
The cooperation will be continued through an Artist Residency in the Global Geopark Mt. Lushan every summer - two from eastern and two from western cultures. Both partners regard their experience of cooperating as innovative and fruitful for their Geoparks and also in accordance with the main activities of Global Geoparks, which are strongly supported by UNESCO.

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Global Geoparks Mt. Lushan, PR China & Bergstrasse- Odenwald, Germany

"Chinese vase"
by Roger Rigorth
(Switzerland)





Left: Patron of the English Riviera Global Geopark, Professor Iain Stewart (foreground) admires the new Royal Terrace Gardens viewing platform at Torquay Seafront

Right: The Official Guide to the English Riviera Global Geopark is now available

"What's happening in the English Riviera Global Geopark"

As with all Global Geoparks, the English Riviera Global Geopark is not simply about geological conservation, it is much more. The Geopark is seen as a strategic driver for community benefits, quality tourism and sustainable economic regeneration. The Geopark offers an opportunity to use the rich geology, landscape, heritage and culture to promote a sense of belonging and a sense of civic pride amongst its residents. In addition, with wide support from the tourism sector, the Geopark is now securely placed within the area's destination tourism strategy and regarded as a new means for reversing the decline in visitor numbers and spending in the resort.

Strengthening the sister partnership with Hong Kong Geopark, Nick Powe (Chair of English Riviera Global Geopark) welcomes Alan Wong (Director of Agriculture, Fisheries and Conservation Hong Kong SAR) to the English Riviera Global Geopark



So what's actually been happening on the ground? Working to bring the Geopark's stories of the last 400 million years to life has been essential. With that in mind, the Geopark worked with the local community and creative sector to produce a short film (accessible via www.englishriviergeopark.org.uk) combining animation and live action. The characters developed for the film then reappear in the beautifully illustrated Official Guide to the English Riviera Global Geopark. Both the film and guide highlight how the resort's outstanding geological heritage has influenced the remarkably diverse marine and terrestrial biodiversity, and shaped its incredible human history. The guide can be purchased online at www.Amazon.co.uk. Events take place all year round but the greatest success of 2010 was Geoquest, recognised by the London 2012 Cultural Olympiad and awarded its prestigious Inspire Mark. Geoquest saw three artists, the Geo-trio, embark on an amazing journey of exploration through the Geopark over the course of one week. By day they interacted with community groups of all ages, researching, creating, telling stories and singing songs about the land. By night they brought

those stories to life in a series of free performance walks and theatrical shows. The pure fun of Geoquest is recorded in photos on the Geopark website. The Geoquest songs, developed as part of the journey, have been recorded, the "Basic Rock Song" being a great introduction to sedimentary, igneous and metamorphic rocks!

Meanwhile, an excellent new Geopark Visitor Centre and cafe have been opened at Berry Head, Brixham. Part of a 3-year £1.8m programme it was designed to rejuvenate Berry Head's heritage, and the way people experience it, with state of the art interpretation. At Royal Terrace Gardens on Torquay seafont, a day of celebrations marked the end of a three-year, £3m project, to clear and secure a prominent cliff face, rejuvenating Victorian gardens and creating a spectacular illuminated flying-walkway and viewing platform.

All-in-all a busy time but the Geopark alone cannot take the credit. Ultimately, success has come as a result of a working partnership, and the commitment and combined strength of the public, private, and voluntary sector.

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Left:
'Sara Sandstone's'
story told by
the voice of a
young girl



Right:
Age before
beauty? The
time relations in
rock, youngest
'Fred Flint' on
the top



Gea Norvegica Geopark telling stories about rocks

Gea Norvegica Geopark in Norway has a very long geological story. The rocks in the Geopark show considerable variation in terms of their ages and diverse origins. Because of the ice ages and associated transport of rock material, we also have many "inhabitants" from elsewhere in southern Norway. This large family of rocks with all its different "brothers, sisters and cousins" is used to explain the diversity of geological processes.

The idea of personifying rocks is not new or unique. Working with a whole family of very "talkative" rocks has created a very useful tool for communication and education. The idea was to let the rocks tell the story about of their origin. 'Sara Sandstone' is an approximately 400 million years old lady and she has an

exciting story to tell. About a different landscape, about another climate in different latitudes and about what it is like to become a sandstone. It is also a story about resources, about her younger cousins out in the North Sea who house the hydrocarbons so vital to our life style.

'Ragna Rhomb-Porphyr' and 'Lars Larvikite' are associated with volcanoes and deep magmatic processes. Difficult processes, but made easier to understand when we use different voices. 'Gerda Gneiss', our oldest and most experienced lady, is tired of being part of a series of different mountain chain building processes. A new mountain range every 300 million years - no wonder she is tired, with a folded surface and visible "wrinkles"!

How we use these rocks today is an important part of the different stories communicated by the Geopark. They are not necessarily confined to their use within the Geopark, but also as an important resource used by humans through history. Our most exotic family member, 'Fred Flint' from Denmark is so proud of his popularity

during the Stone Age while 'Lara Limestone' boasts about her fine fossils and also that you will find her in your writing paper and in your tooth paste. Geology is not important only for geologists, but for all of us on a daily basis! Our rock family now has its own exhibition on Jomfruland, the outermost island in Gea Norvegica. This island is part of an end moraine from the last Ice Age, the big Ra-moraine, bordering the whole of Scandinavia. In this area all the different rocks are present in boulders carried by the ice and rounded by the waves. Inside the exhibition you can read the stories, meet the rocks, touch them and move them around.

This educational tool was intended for children. We have found that this exhibition is successful for a lot of different target groups. Even geologists enjoy 'Anders Amphibolite' when he is bragging about his red garnets or 'Carl Conglomerate' when he explains the difference between him and 'Sara Sandstone'. The possibilities with our rocks are almost endless. We put them on a map, we arrange them according to origin, to age, look at different colours, different grain size, sorting and so on. It is about observing and about wondering. New rock family members will appear, and we are looking forward to welcoming them in our exhibition and our educational programme.

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**Rocks telling us
where they came
from, placed on the
geological map of
Gea Norvegica
Geopark**

'Sara Sandstone'
and her fellows
share
experiences, at
our outdoor
exhibition on
Molen Ice Age
nature
monument



Fun First

Copper Coast Geopark



Visitors to the Geopark take part in a sandcastle competition

Focus on the young and give the family fun is the theme running through many of our activities. The Copper Coast is a geological garden where you can walk through millions of years of geology looking at rocks from each period. We also have a geology garden - Tina, our geologist, sows the seeds of interest, fun and fascination in the minds of young and old.

same time. 'Save Earth - it's the only planet with chocolate!' This is another project aimed at engaging children and their parents.

Then there's the excitement of digging for and excavating 'model' fossils, but most fun is to be had on the beach working together making mosaics from the rich variety of pebbles to be found there. There are usually lots of questions about fossils, pebble shape and colour. On the beach our sandcastle competition attracted participants aged from 5 to 25!

We offer numerous guided walks covering flora, fauna and geology for all the family to enjoy. Our dawn chorus walk starting at 4.30 am at Fenor Bog and ending with strong coffee and light snacks was popular with more hardy individuals.

Speaking of food, we have lots of places throughout the Geopark to enjoy a picnic ranging from spectacular cliffs, beaches and little harbours, many with original works of stone art, to Dunhill Castle. But best of all in 2010, was the picnic under the stars at Tankardstown, our old 19th Century engine house. The local astronomy club brought along telescopes and together with guest speakers made a damp evening magical. Our Geology Garden is proving so popular for picnics that we are planning a new one in the adjacent Comeragh Mountains to explain the evolution of its glacial landscape.

The Irish week-long solar festival of Bealtaine was crammed with activities and ended on International Biodiversity Day, which for us

was an action packed day on the beach. We were really pleased when the Guardian, a UK newspaper, mentioned our activities in their list of the Top Ten activities for that special day.

Even our School trips, although tailored to teachers needs, are fun (honestly). In addition to studying, geology, coastal erosion and analysing strategies for protection and so on, we include scavenger-hunts (rock pools and pebble hunts) and discuss the part that children played in the mining activities that gave our Geopark its name. Social history is important too, and children love to hear about what working conditions were like for boys and girls 150 years ago and more importantly what they ate and the games they played.

Bringing the generations together through our Wild Child Day (sponsored by Waterford County Childcare Committee), was a brilliant idea initiated by Tina Keating our geologist. It was a hands on, no holds barred event centred around the games children used to play down the generations and that are in danger of being forgotten - Skipping styles, German Jumps (yes we call it that here), Chinese Knucks, and Tig Red Rover. Our oldest participant was in her late 80s and people came from over 100kms to be there. We will try to publish our findings if Tina can put her Knucks away.

Fun, fun fun, reminds me of a song. Geology boring? Not here!

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Children using a clay model to reconstruct the positions of the plates on the Earth's surface



Children can explore their budding artistic skills by creating clay models of the plates that make up our planet and learn about plate tectonics while putting the planet back together again. Fun and understanding at the

Children and their parents use pebbles to make a starfish mosaic



The Kellwasser Valley



The outcrop following its extension in autumn 2009

The Harz Mountains of Central Germany are well known as a classical area in the geosciences and history of mining and therefore contain a number of important geosites now within the Geopark Harz, Braunschweiger Land, Ostfalen. In the middle of the 19th Century a foundry-man from the town of Altenau handed a piece of black bituminous limestone with abundant fossils from a small quarry in the Kellwasser Valley to Friedrich Adolph Roemer, a famous geologist and palaeontologist. He immediately recognized the widespread contemporaneous occurrence of such limestones in some regions of Europe (Roemer 1850). Since 1900 the respective Late Devonian limestone was even called "Kellwasser Kalk" (= Kellwasser Limestone) which in fact consists of two distinct layers of alternating dark limestones and shales. Later it was recognized that the fos-

siferous black limestones in the Kellwasser Valley represent one of the five most important mass extinction events in Earth history. In the meantime, evidence for the so-called Kellwasser Crisis has been found worldwide. Furthermore, the top of the Upper Kellwasser Limestone may be used as the lithological marker for the Frasnian-Famennian stage boundary within the Late Devonian. Consequently, the Kellwasser Valley must be regarded as a reference site and one of the most important geosites of the Geopark Harz, Braunschweiger Land, Ostfalen. Since the original limestone quarry was drowned due to the construction of the Oker Reservoir between 1938 and 1956, small outcrops and artificial trenches have been used as a substitute for the type locality in numerous studies. In 1988 a new forest road was constructed and exposed a much better section. Subsequently this section has weathered and most of the outcrop was covered by vegetation. Given the significance of the outcrop, a network of organizations including the Geopark, the LBEG (Landesamt für Bergbau und Energie, Hannover), the Technical University Clausthal, the Senckenberg Forschungsinstitut and

Naturmuseum Frankfurt and some members of the German Subcommission on Devonian Stratigraphy decided in 2009 to re-open and enlarge the exposure. In the meantime the Regionalverband Harz (Quedlinburg) produced a poster explaining the nature and significance of the Kellwasser Limestones. This was officially presented

The Kellwasser Valley, pinpointing a global event 375 million years ago in the Geopark Harz, Braunschweiger Land, Ostfalen

to the public in November 2010. The site is now designated as "Geopunkt 7" within "Landmarke 2" of the Geopark's guiding system.

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Extension of the outcrop of the Kellwasser type locality



The nature of the outcrop prior to its extension in 2009

The Transboundary Novohrad - Nograd Geopark

The first major geological event shaping the area happened some 30 million years ago with the accretion of terrains and the creation of the Pannonian basin in Central Europe. The second main event was in 2008, when the 1, 587 km² territory of the transborder Novohrad - Nograd Geopark was established. Since that time several projects have targeted the enhancement of geotourism within the territory. The Geopark comprises an administrative area of 63 settlements in Hungary and 28 habitations in Slovakia.)

The area is recognised as an important centre for the Paloc ethnic group's folk art and living traditions, and the promotion of activities concerning the preservation of its cultural identity is also an important task for the management of the Geopark. A common geopark identity manual was produced to define the Geopark's identity and to maintain its visibility in both countries. This has been used in the development of heritage interpretation and for common activities which target the widest audience from elementary school children to retirees. The Geopark also gets the attention of the media and infor-

**Mucin cave
entrance**



**The Paloc
produce
festival at
Holloko**

mation can be accessed on the website <http://www.nngeopark.eu>.

Gaining EGN membership gave a boost to developmental projects during 2010. The "Infrastructure development of the Novohrad-Nograd Geopark" (id. number: HUSK 0801/216) project with the lead partner of the Bukk National Park Directorate established a new Geopark Visitor Centre at Salgotarjan ,Baglyasko, Hungary. A study trail has been extended and a cellar was rebuilt to host a future paleontological exhibition in the Filakovo Castle (Slovakia). At Mucin a trail was developed to make a sculpted tree-trunk cave accessible to tourists. This trail will be extended in the future, to cross the border to the Hungarian side of the Geopark and access the fossil site of Ipolytarnoc, which is the main gateway to the Geopark. The European Diploma-designated Ipolytarnoc Fossils site (<http://ipolytarnoc.kvvm.hu>) was also enriched by new interpretative tools and facilities concerning geology, including an exhibition about

the birth of the Carpathian Basin.

The Nograd Geopark Association, which is one of the main stakeholders in the Geopark, is working on a project to create an educational task force involving all geography and biology teachers in the Geopark's settlements in order to involve the schools in the Geopark. The cross-border body of the Novohrad-Nograd Geopark Nonprofit kft is developing project applications and further improvements are expected to happen in the world's first multi-lingual transborder geopark.

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Press conference announcing the Geopark's membership of the EGN



Magma Geopark

One of a series of caves that clearly has been worn out of a solid rock by the sea

Created in the past, experienced in the present and a promise for the future

Magma Geopark is an area of unique geology and cultural heritage. It is situated in southwest Norway and extends over 2329 km². The Geopark project was established in 2006 as a regional development initiative and in March, 2010 Magma Geopark became a member of the European Geopark Network.

The story began as early as 1.5 billion years ago, when the red-hot magma and sky high mountains characterized the terrain of the region. Through millions of years erosion and glaciers formed the characteristic landscape we see today. Although the mountain massifs are now washed away and the magma has cooled down, the area offers a glimpse into what is called the Earth's surface. Here are rocks you will hardly find anywhere else in the world, including Anorthosite - in order to find more of it you would need to travel to the moon! This unique area provides high-value heritage in local, national and international contexts.

A Geopark must be managed in such a way that future generations can enjoy it. At the same time we want to contribute to the well-being of the region by creating partnerships, developing and sustaining the region, and thus



In (olden) days it was believed that the distinctive stripes in the rocks on the way to Eigeroy lighthouse were wheel tracks of a chariot belonging to Thor, the mythical God of Thunder. Today we know it was noritic magma that filled these dykes and solidified to form a solid rock almost 930 million years ago

assisting new business start-ups and generating more jobs. We aim to promote sustainable tourism principles by providing visitors with experiences that leave nothing else behind but footprints. Focusing on Geotourism we contribute to protecting and enhancing the region's character. We support the local economy by encouraging visitors to contribute to increased sales of local food products, accommodation in cabins, local hotels or campsites. By selling experiences - products that never run out of date - we can make our offer last forever. Therefore, we hope that even more innovative ideas will be generated and developed in the region.

We are working in collaboration with our partners and landowners in order to open arrange for all 46 Geopark locations open to the public. Here are some examples of our locations:

- Huge coastal caves cut out of solid rock at Brufjell
- St. Olav's serpent, a fantastic glacial ridge (esker) that meanders through the landscape;
- Gloppedal scree, one of the largest landslides in Europe;
- Blafjell, an old ilmenite mine;
- Eigeroy lighthouse with a walk through a part of a huge magma chamber in a coastal landscape;
- Hellersheia, anorthosite landscape with huge blocks and caves;
- Storeknuten, where you can see where magma entered Europe's largest layered intru-

sion;

- Orsdalen, an old tungsten mine;
- Gursli, an old molybdenum mine;
- Flekkefjord railroad museum.

MagmaGeopark is committed to creating value in the region and we are excited about the positive results that have already taken place.

• A newly started company Spoor offers adventure packages to businesses and tourists. Magma Geopark is one of four players who have initiated the establishment of Spoor AS.

• We work with the newly established company ViaFjord, which offers climbing tours along various routes in the Geopark.

• Guided tours organized by the Geopark held regularly for businesses and tourist groups.

• National and international partners contribute both to the development and promotion of the Geopark. Development and innovation are our key focus, and we have contributed to the establishment of:

• Visit Mine Project: facilitation of visiting the old mines (these are also emerging Geopark locations).

• Jossingfjord Center: an experience and activity center that presents the region's geology, mining and cultural history.

• Establishment of the Nordic Geo Guide School.

• Establishment of the outdoor school "In a natural way".

Pal Thjomoe
www.magmaageopark.com



A school class visiting Blafjell abandoned mine, walking on pure Ilmenite

WELCOME

european
GEOPARKS

Basque coast geopark

A strong cultural identity influenced by geology

The Geopark is located on the West coast of Gipuzkoa province, Basque Autonomous Community in the north of Spain. The French border is 35 km from the eastern boundary of the territory. The 89 km² of the Geopark includes the municipalities of Zumaia, Deba and Mutriku, and is inhabited by around 19,700 people.

The territory encompasses a 23 km coastline consisting largely of steep cliffs and includes one of the most extensive intertidal abrasion platforms in Europe. The coastal area contains a complete record of the important boundaries between geological ages such as the Cretaceous/Tertiary (K-T boundary) and the Palaeocene/Eocene boundary, and also includes the stratotypes (international references) for two stage boundaries within the Palaeocene (Danian-Selandian and Selandian-Thanetian).

Inland the landscape is dominated by hilly countryside, where much of the agricultural activity takes place. A group of mountains composed of Urgonian limestone - former barrier reefs - can be found in the southern part of the region.



Itziar Sanctuary and Andutz Mountain (Mesozoic reef limestone)

The educational value of this heritage is also very important, as evidenced by the success that has been achieved through initiatives such as the Algorri Interpretation Centre (Zumaia) and the Nautilus Fossil Museum (Mutriku).

It is interesting to note that the municipalities of Deba and Mutriku have one of the greatest concentrations of caves of archaeological significance in the whole of Gipuzkoa province. In Deba we find two important archaeological sites from the Upper Palaeolithic period, namely the Ekain and Praileaitz caves. The cave paintings in Ekain cave (in particular the figures of horses), are one of the best examples of Franco-Cantabrian art. As a result, the Ekain cave was declared a UNESCO World Heritage Site in 2008. The replica of the Ekain cave, Ekainberri, can be visited in the neighbouring town of Zestoa.

There are many examples linking geology and human activities which define the Basque culture. For example, some caves have traditionally been considered to be the homes of mythical genies such as the Jentiletzeta caves in Mutriku and the Deba River, a name which alludes to a female divinity in the Celtic Pantheon connected to the

worship of waters.

Geotourism in this area started in 2002 with the initiation of the first guided walks to the Zumaia outcrop and included sites such as the K-T boundary. The day-long hikes along the coastal outcrop between Deba and Zumaia introduce a continuous geological record spanning 60 million years. Over the years, new activities and facilities have sprung up along the coast under the umbrella of the Coastal Flysch Route (www.flysch.com), resulting in a high level of geotourism development in the area. We are now extending geotourism from the coast to the inland sector of the territory.

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Geotourism by boat to observe the main coastal outcrop. Boat trips combine the interpretation of the natural and cultural heritage

Zumaia-Deba coastal outcrop. Geological and biological values of the area led to the declaration in 2008 of the Zumaia-Deba Protected Biotope by the Basque Government



Cilento and Vallo di Diano Geopark

The Geopark is located in the province of Salerno, Campania and occupies the whole of the territory of the National Park of the Cilento and Vallo di Diano. The geopark extends from the Tyrrhenian coast to the margin of the Lucania mountains. The strong morphological contrast is attributable to the distinct bipartite nature of the geology and to the area's long evolutionary history.

Carbonate massifs within the Geopark are characterized by karst features including caves, vast plateaus with dolines and polje separated by slopes sculpted by intense neo tectonic activity and dissected by deep gorges and canyons. The upper arenaceous conglomerate component of the "Flysch of the Cilento" exposed on the surface on Mount Stella, Mount Gelbison and Mount Centaurino and the underlying clayey marly component are associated with the hilly reliefs of the territory. In this Geopark various categories of geosites were distinguished based on their stratigraphical, geomorphological, paleoenvironmental, structural, hydrogeological and paleontological significance. Geosites also include sites with particular

panoramic (scenic sites) or economic (ancient mines) value.

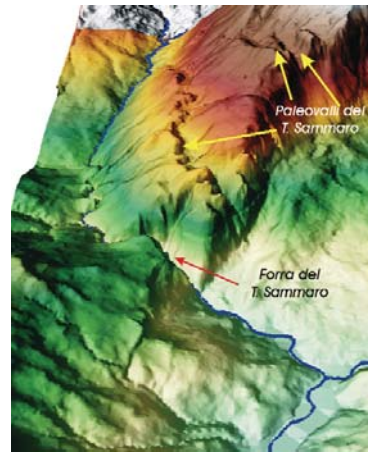
A large part of the Geopark's territory coincides with the Biosphere Reserves of the National Park of the Cilento and Vallo di Diano which has been included in the UNESCO list of World Heritage Sites since 1998. The majority of geosites occur within the UNESCO site.

Sites of historical and cultural significance include the city of Paestum, which was founded around 650 BC by Greek settlers from the Calabrian city of Sybaris. The city of Elia (Velia) was founded by Greeks around 540 BC and became the home of the Eleatic School of philosophers. The city was abandoned in medieval times. Padula Charterhouse, a Carthusian monastery, at the foot of Mount Maddalena was founded in 1306. It is the second largest Charterhouse in Italy and is a UNESCO World Heritage Site. Historically significant villages include the abandoned suburbs of Roscigno Vecchio and S. Severino. Sites of religious significance such as the Sanctuary of the Madonna of Novi on Mount Gelbison are set in spectacular landscapes. The Geopark has benefited from earlier National Park projects and includes and extends the results of these projects in its activities. "The ecological network for local sustainable development", financed by the funds from the POR Campania 2000 - 2006, protects the natural environment and historical and cultural resources, strengthens the provision of services and promotes sustainable development. The National Park has also man-

A territory to be discovered

aged European funded projects including: Life Nature.

The Geopark has a network of trails of approximately 1500 km sign posted in accordance with the rules of the Italian Alpine Club. These trails are partly equipped with educational panels, a system of signs and rest areas. The Geopark also contains a network of approximately 41 museums devoted to archaeology, geology and paleontology and the history and development of civilization.



DTM with the fluvio-karstic valley of Sammaro (red arrow); the oldest level of the valley is indicated on the right side (yellow arrows).

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The gorge of Mingardo River confined by fault scarp



Entrance to Pertosa caves

Rokua Geopark



The area has a special arctic character

Finland's first and world's northernmost Geopark

Rokua Geopark was accepted into the Global and European Geoparks Networks in October 2010 during the 9th EGN Conference in Lesvos, Greece. Rokua is situated in Northern Finland, about 200 km south of the Arctic Circle between the cities of Oulu and Kajaani. From abroad Rokua is easiest to reach by flying to the Oulu airport through the airports of Helsinki or Riga and continuing to the area by car or train. Rokua Geopark provides to the European Geoparks Network a new northern dimension and interesting geology starting from 2.6 billion years ago. The Geopark's special arctic character, long winter and Finnish traditions make it an interesting area for a large variety of visitors. During the winter months, in the middle of a snowy landscape and frozen lakes, you are able to get a feeling for a way of life and the scenery which characterized the last Ice Age. The characteristic

During winter months the esker hills and kettle-holes are an excellent place for snowshoeing



features of the area consist of landforms shaped by the Ice Age and include glacial ridges, pine and lichen-clad heaths, kettle holes and small ponds filled with crystal clear water. The Geopark consists of the River Oulujoki Valley, Rokua Esker and dune area and the area surrounding Lake Oulujarvi. The areas are linked by the Rokua esker field and its geosites, which were formed on top of ancient bedrock during the withdrawal phase of the last Ice Age (Weichselian Stage). In addition to the geology, the areas are also connected by the prehistory of the people who followed the withdrawal of the ice sheet and the sea.

The characteristic landscape, Natural Park and wellness services contribute to the attractions of the Rokua esker and dune area. Rokua's cross-country skiing and hiking routes are excellent; in early spring around 70 kilometres of cross-country skiing tracks are open. In the summer, there are around 50 kilometres of hiking routes. Rokua has accommodation in hotels, camping centres and privately owned cabins. Diverse natural and cultural attractions are to be found around Lake Oulujarvi. Oulujarvi hiking area includes numerous islands on the west side of Lake Oulujarvi. Cultural services are provided by the Kassu Halonen Art

House, where art exhibitions and musical events are held in the summer. Lake Oulujarvi is also a great place for boating and kayaking activities. The attraction of the River Oulujoki Valley is based on the area's beautiful nature and historical sites. A number of tourism companies are located in the river valley's municipalities. There is a diverse range of recreational and leisure services along the River Oulujoki.

The Geopark's main information site is the Suppa Information Centre located at Rokua Esker and Dune Area. Suppa has an exhibition describing the formation of the Geopark area: Rokua - The Island that the Sea Abandoned. The exhibition themes are: geology, human history, nature and the present day.

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Pine and lichen-clad heaths are characteristic to the area, photo by Ilpo Okkonen



Tuscan Mining Park

Geology and Landscape



Geothermal activity in the Biancane o Valle del Diavolo

The Geopark is located in the northern sector of the Grosseto Province in Tuscany, central Italy. It coincides with the territory of the Colline Metallifere (Metalliferous Hills), and together with some areas in Sardinia is one of the most important mining areas in Italy. The Geopark occupies an area of 1087 km². This region is relatively sparsely populated by 53,549 people with a population density of 49.3 people/km² compared with 198.8 people/km² for the whole of Italy.

The geological features of the Geopark resulted from the long and complex geological evolution of southern Tuscany associated mainly with the formation of the Apennine chain.

The territory contains several sulphide orebodies which, because of their size and metal content, were intense-

ly exploited for their lead, zinc, copper, silver, iron, and pyrite content over a period of approximately three millennia.

The influence of recent and modern geothermal and hydrothermal activity is seen in highly significant geosites such as thermal springs. The Geopark is characterized by hilly slopes with frequent outcrops of limestone, karst features and red clayey soils derived from the weathering of the limestone.

The cultural heritage is revealed mainly in the evidence of mining and metal production. In view of this, the Parco delle Colline Metallifere focuses on abandoned mines and metallurgical sites. The Parco delle Colline Metallifere has used its Masterplan to record the technological and archaeological heritage of the Colline Metallifere and to develop strategies for the recovery, preservation, management and development of the archaeological, geological and industrial sites.

The Geopark is a consortium managed by a Committee involving the Ministry of the Environment, Ministry of Heritage and Culture, Tuscan Region, Province of Grosseto, Comunita Montana delle Colline Metallifere and the seven municipalities referred to above. The management of sites and products of the Geopark and initiatives for conservation, protection and economic development of the territory are carried out by the local government.

The project envisages opening one or two reception points in the territory of each municipality defined as GATEWAYS TO THE PARK. The mission of the Gateways

to the Park is to promote knowledge of the world of mining, of the geological heritage and historical landscape, of the history of mining activities and, above all the identity of the area of the Colline Metallifere. The gateways can be of various services including information about the sites and the services and activities they offer, museum routes, guided tours, animation activities, workshops and educational activities, hosting displays and exhibitions, hosting events, sale of informative and educational material.

The Geopark's basic mission is to promote opportunities for the communities, and for the local area. Local councils and communities have taken measures to conserve and develop the impressive industrial archaeological record. This record is perceived as a valuable foundation of their identity, and as an expression of an industry which for many years has acted as a binding force for local communities.

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The Gateway of the Park of Gavorrano



Slag from Copper ore exploitation at Le Roste (XIXth century)



Vikos - Aaos Geopark

Landscape, nature and culture in perfect harmony

Vikos- Aaos Geopark is one of the four Greek Geoparks and was delighted to become a member of the European and Global Geopark Networks in 2010. It is located in the region of Epirus, Ioannina, NW Greece.

It occupies the NW part of the Pindus Mountain Range and is characterized by a high rugged relief and an impressive landscape. It also includes Mt. Smolikas (alt. 2637m) the second highest mountain in Greece and Mt. Tymfi (alt. 2497m) with the two spectacular gorges of Vikos and Aaos.

The Geopark covers an area of 1,200 km² and the 9,500 inhabitants reside in 61 settlements in the municipalities of Zagori and Konitsa. The territory contains several traditional settlements and monuments dating back to the 14th - 19th century includ-

ing monasteries, schools, churches, chapels and arched stone bridges.

Vikos Aaos Geopark is one of the most impressive areas in Greece in terms of its aesthetic values and range of geodynamic processes. Numerous geosites within the territory are situated in landscapes of incomparable beauty. They owe their origin to a wide range of geological processes and are of excellent scientific and educational value.

The area of Epirus is characterised by a its strong relief and the significant relationship between geology and drainage resulting in extensive aquifers and many springs. Mt. Tymfi with its calcareous bedrock is associated with steep, rocky slopes and cliffs, deep gorges, glacial lakes, springs, streams and rivers with pure water. The deep gorges reveal the rock sections which constitute the geological structure of the area.

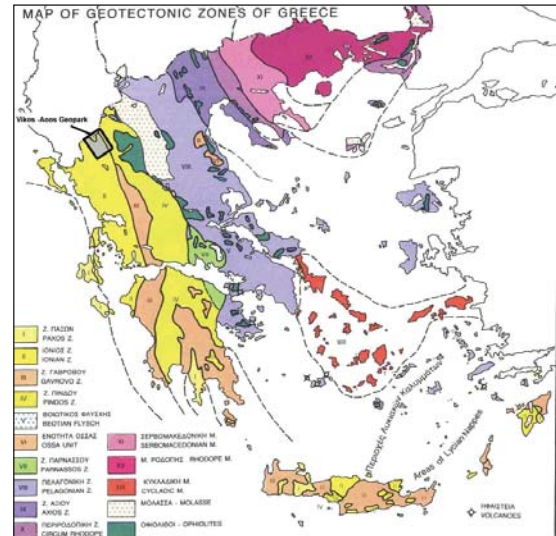
Evergreen shrubs, constituted mainly by the kermes and the holly oak, as well as deciduous oak woods occur at low altitudes. They are succeeded at higher altitudes by sub - Mediterranean conifers including black pine, fir and occasionally stinking juniper and beech forests. The mountain tops are characterized by Balkan pine woods and thickets, extensive sub-alpine pastures and bare rock surfaces and screes.



A stone bridge in the Vikos Gorge

In conclusion this exceptionally beautiful landscape is characterised by its high biodiversity with respect to both flora and fauna.

Ecotourism on Mt Tymfi. Astraka peak (2436m) and the glacial lake which lies at its foothills



The location of Vikos - Aaos Geopark in relation to the tectonic zones of Greece

More than 2000 plant species grow in the area including several rare, endemic and protected ones. The territory is inhabited by approximately 300 species of vertebrates. Some species including the brown bear, the wolf, the otter, the Balkan chamois, the golden eagle and the alpine newt are protected by European Union and national legislation.

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2011 MEETINGS

24 June 2011 The 2nd Asia-Pacific Seminar on Geopark, Geoconservation and Sustainable Development 2011 (APSGGSD 2011). Hong Kong.

16 - 22 July 2011 The Second Asia-Pacific Geoparks Network Symposium on "Geopark and Geotourism for Regional Sustainable Development" (APGNSymp2011) Hanoi, Vietnam.
http://www.vigmr.vn/Asia_Pacific_Geoparks_Network_2nd_Symposium_2011/

25 - 30 July 2011 International Summer School "Geotourism, culture and sustainability" Naturtejo Geopark Portugal.

7 - 9 September 2011 International conference: Managing Geosites in protected areas - Savoie France.

13 - 15 September EGN CC meeting Gea Norvegica Geopark Norway.

16 - 20 September 10th European Geoparks Conference, Gea Norvegica Geopark Norway,
<http://www.geanor.no>

26 September - 11 October 2011
5th International Intensive Course on Geoparks
- Lesvos Geopark - Greece.



24 - 27 October 2011 GEO REG Regional Geosciences of France and neighbouring countries Villeneuve d'Ascq (France). Including the session " Geoconservation 20 years after the Digne conference : outcomes and challenges "- <http://e.geologie.free.fr/actualite/info-forum-georeg.pdf>

9 - 13 of November 2011 International Congress of Geotourism - AROUCA 2011.

21 - 28 November 2011 First International Conference on African & Arabian Geoparks "Aspiring Geoparks in Africa and Arab world" El Jadida, Morocco.

2012 MEETINGS

March 2012 EGN Advisory and Coordination Committee Meeting - Andalucia Spain.

12 - 15 May 2012 5th International GGN Conference in the Unzen Geopark, Japan.

2 - 10 August 2012 The 34th International Geological Congress (IGC) Brisbane, Australia.

September 2012 11th European Geoparks Conference - Arouca Geopark Portugal.



2013 MEETINGS

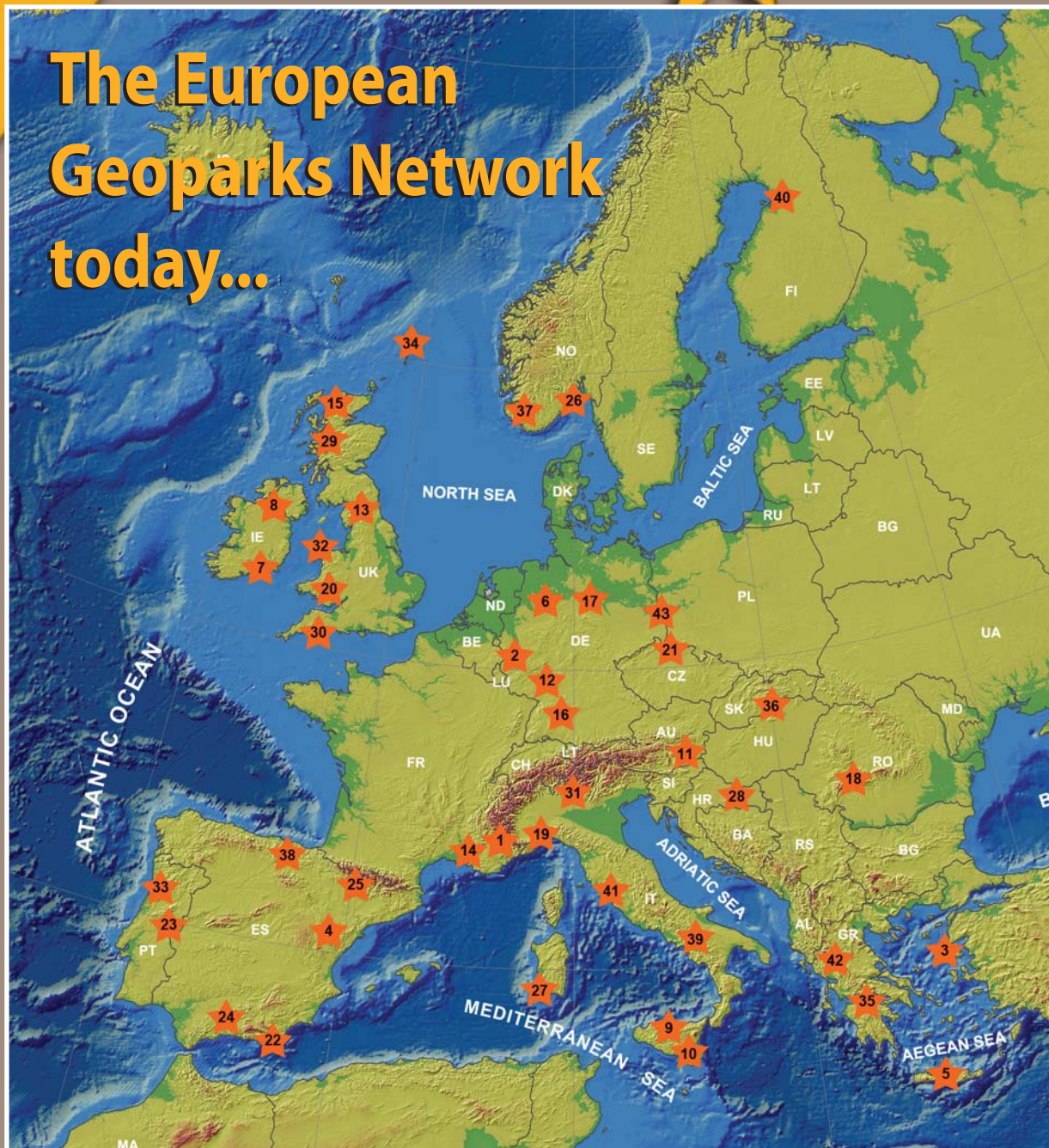
March 2013 EGN Advisory and Coordination Committee Meeting

September 2013 12th European Geoparks Conference in Italy

www.europeangeoparks.org

GEOPARK CONFERENCES

The European Geoparks Network today...



The Network consists of 43 Geoparks in 17 European countries (April 2011)

1. Reserve Geologique de Haute - Provence	FRANCE
2. Vulkaneifel European Geopark	GERMANY
3. Petrified Forest of Lesvos	GREECE
4. Maestrazgo Cultural Park	ARAGON, SPAIN
5. Psiloritis Natural Park	GREECE
6. Terra.Vita Naturpark	GERMANY
7. Copper Coast Geopark	IRELAND
8. Marble Arch Caves European Geopark	NORTHERN IRELAND & IRELAND
9. Madonie Geopark	ITALY
10. Rocca di Cerere Geopark	ITALY
11. Naturpark Steirische Eisenwurz en	AUSTRIA
12. Naturpark Bergstrasse Odenwald	GERMANY
13. North Pennines AONB	ENGLAND, UK
14. Park Naturel Regional 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 Natural Park	ANDALUCIA, SPAIN

23. Naturtejo Geopark	PORTUGAL
24. Sierras Subbeticas Natural Park	ANDALUCIA, SPAIN
25. Sobrarbe Geopark	ARAGON, SPAIN
26. Gea Norvegica Geopark	NORWAY
27. Geological, Mining Park of Sardenia	ITALY
28. Papuk Geopark	CROATIA
29. Lochaber Geopark	SCOTLAND, UK
30. English Riviera Geopark	ENGLAND, UK
31. Adamello - Brenta Nature Park	ITALY
32. Geo Mon	WALES, UK
33. Arouca Geopark	PORTUGAL
34. Shetlands	SCOTLAND - UK
35. Chelmos Vouraikos	GREECE
36. Novohrad - Nograd Geopark	HUNGARY & SLOVAKIA
37. Magma Geopark	NORWAY
38. Basque Coast Geopark, Pais Vasco	SPAIN
39. Parco Nazionale del Cilento e Vallo di Diano, Campania	ITALY
40. Rokua Geopark	FINLAND
41. Tuscan Mining Park, Toscana	ITALY
42. Vikos - Aaos Geopark	GREECE
43. Muskau Arch Geopark	POLAND & GERMANY