



Geoparks

europaean GEO PARKS

network
European Geoparks Magazine • Issue 2

- The European Geoparks Network today
- High Standards for European Geopark Services
- Global UNESCO Network Geoparks
- Zhangjajie World Geopark
- Portraits of 18 European Geoparks



Musée Géologique de Haute-Provence

Earth Stories

Primitive people were faced by a physical world of many wonders and they asked the same questions that young children of today ask: how did the world begin? How were the mountains made? Where do earthquakes come from?

To answer these questions about natural phenomena, stories were shaped and shared around watch-fires, hearth fires and markets.

In Greek mythology, all that existed in the beginning was Chaos, a vast dark emptiness. Then Gaea, Mother Earth, appeared and her snowy mountains and green valleys became the living places of the gods and later humans. Her children were strange gigantic creatures with the crushing overwhelming strength of hurricanes, earthquakes and volcanoes. In the stories about them, there are no humans, only enormous movements of forces lifting up the mountains and gouging out the seas. Likewise, scientists today have similar stories (theories) about enormous volcanic eruptions and cataclysmic earthquakes, about the tectonic plates of the earth crunching into each other, twisting and sliding, submerging, then exposing rocks and landforms which are sculptured by the elements of nature. These landforms tell the story of an immense geological voyage that has shaped the environment around us.

The European Network of Geoparks helps us read these awesome tales by preserving these priceless geological footprints from being buried by the blind rush of modern progress and industrialization. In a Geopark, we stop and look and learn, remembering our place in the natural world that sustains and supports us.

Come and explore with us in the European Geoparks.



European Geoparks Network Magazine

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European Geoparks Network Magazine

The European Geoparks Network	4	
INTERREG III C project – reference		
A tool for geotourism Development in Europe	6	
High standards for Geopark Services	7	
Geoforums	8	
Spotlighting	9	
5th Geoparks Network Meeting	10	
The Madonie Declaration	11	
M. L. Frey: EGN Reflections on a challenge with perspective	12	
UNESCO - Global Geoparks Network	14	
Zhangjiajie World Geopark	15	
Welcome to the European Geoparks	16	
La Réserve Géologique de Haute-Provence	17	
Vulkaneifel Geopark	18	
Petrified Forest of Lesvos	19	
Astroblème Châtaigneraie Limousine	20	
Psiloritis Natural Park, European Geopark	21	
Naturepark TERRA.vita	22	
The Copper Coast Geopark	23	
Marble Arch Caves Geopark	24	
Madonie Natural Park	25	
The European Geopark "Rocca di Cerere"	26	
GeoLine in the Nature Park Eisenwurzen	27	
European and National Geopark Bergstrasse- Odenwald Federal Republic of Germany	28	
North Pennines	29	
The Abberley and Malvern Hills Geopark	30	
Mastrazgo Cultural Park	31	
Kamptal Geopark	32	
Luberon Geopark	33	
North West Highlands Geopark	34	
The European Geoparks Network Charter	35	



THE EUROPEAN GEOPARKS NETWORK

A brief history...

It all began in 1996 in Beijing where G. Martini and N. Zouros were attending the International Geological Congress. During their discussion on ways to simultaneously protect and promote European geological heritage and sustainable local development, the idea of a network of European Geoparks arose. While there has been a lot of work done on pro-

tection of the Earth's heritage, it was the first time that the needs of the society in which the geological objects were found would be addressed through a program of conservation. Much work over the next four years finally turned the idea into a reality. In June 2000, representatives of four European territories met together on Lesvos Island in Greece: Reserve Géologique de Haute-Provence, France; Lesvos Petrified Forest (Natural History Museum of the Lesvos Petrified Forest - Lesvos isl.), Greece; Geopark Gerolstein / Vulkanneifel, Germany; and Maestrazgo Cultural Park, Spain. The unifying objective of the meeting was to address their common socio-economic problems (slow economic development, unemployment and a high level of emigration) through the protection of geological heritage and the promotion of geotourism. The result was the signing of a convention declaring the cre-

What is a European Geopark

1. A European Geopark is a territory, which includes a particular geological heritage and a sustainable territorial development strategy supported by a European programme to promote development.
2. It has clearly defined boundaries and sufficient surface area for true territorial economic development.
3. A European Geopark comprises a certain number of geological sites of particular importance in terms of their scientific quality, rarity, aesthetic appeal or educational value.
4. The majority of sites present on the territory of a European Geopark are part of the geological heritage, but their interest may also be archaeological, ecological, historical or cultural.



ation of the European Geoparks Network (the Network owns the "European Geopark" trademark registered within all countries in the European Community). The purpose of this general designation was to provide a network within which to share information and expertise, and to define common tools in addressing the above objectives. Furthermore, all members

Obtaining a European Geopark label ...

Any region wishing to develop a "European Geopark", should contact the Coordination unit (see contact information below). All requests for labellisation must be accompanied by a dossier, prepared on the model of the application dossier for nomination as a "European Geopark".

This application dossier must be completed and submitted by the structure in charge of managing the territory where the Geopark is to be located.

This application dossier must be sent directly to the Coordination Committee:

**Cellule de coordination
du réseau
des Geoparks Européens,
Réserve Géologique
de Haute-Provence,
BP 156,
F-04005 Digne-les-Bains
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agreed to the necessity of improvement and enlargement of this Network to other European areas. After the 1st European Geoparks Network (EGN) Meeting held in Molinos, Maestrazgo (Spain) in November 2000, three more successful congresses were held, where the first steps of geotourism development, as well as future collaboration with other countries and institutions and the expansion of the EGN were reported. The next significant step for the Network was the signing of an official agreement of collaboration with UNESCO (Division of Earth Sciences) in April 2001, placing the EGN under the auspices of the organization, thereby confirming the Network's important contributions to conservation and sustainable development issues in Europe.



The European Geopark Network today ...

At present, the Network is comprised of 21 Geoparks from eight E.U. countries.

- | | |
|---|---|
| 1. Réserve Géologique de Haute Provence – France | 12. Kulturpark Kamptal - AUSTRIA |
| 2. Vulkaneifel European Geopark - GERMANY | 13. Naturpark Steirische Eisenwurzten - AUSTRIA |
| 3. Petrified Forest of Lesvos - GREECE | 14. Naturpark Bergstrasse-Odenwald - GERMANY |
| 4. Maestrazgo Cultural Park - SPAIN | 15. North Pennines AONB, ENGLAND – UK |
| 5. Astoblème Chataigneraie Limousine Geopark - FRANCE | 16. Abberley and Malvern Hills Geopark, ENGLAND - UK |
| 6. Psiloritis Natural Park - GREECE | 17. North West Highlands Geopark – SCOTLAND - UK |
| 7. Geo.Naturpark Terra Vita – GERMANY | 18. Parc Naturel Regional du Luberon – FRANCE |
| 8. Copper Coast European Geopark - IRELAND | 19. Geopark Swabian Albs - GERMANY |
| 9. Marble Arch Caves & Cuilcagh Mountain Park – NORTHERN IRELAND - UK | 20. Harz Braunschweiger Land Ostfalen Geopark - GERMANY |
| 10. Madonie Geopark - ITALY | 21. Mecklenburg Ice age Park - GERMANY |
| 11. Parco Culturale Rocca di Cerere – ITALY | |

We invite all European territories containing a significant geological heritage to join our efforts and participate in the Network.

European Geoparks

A tool for geotourism development in Europe

The geological heritage of Europe is an important part of its natural heritage. Fragments of this heritage – present in areas known as Geoparks – represent parts of a unique continent

- scale puzzle of the geological history and evolution of Europe. Geoparks contain geological monuments and sites with special scientific importance and aesthetic value and until now are not well-known tourist destinations.

The **INTERREG IIIIC** Project focuses on changing this situation by strengthening the co-operation between European Geoparks through the creation and application of a common strategy for geotourism development on a European level. The main idea is to evolve the Network to a permanent European structure, with members representing the European geological heritage in all E.U. countries. The project also aims to promote the consciousness and awareness of the

public towards the protection of natural heritage and to improve the quality of services offered to tourists.

Since the project partners are spread out over eight European Union countries, the programme will help the exchange of information, knowledge and good practice between different partners, who are working in the same fields with similar goals. Transnational networking and sharing of know-how will mean new concepts, outputs and results for further integration on spatial planning, transnational environmental problems and development issues.

Finally, this structure will ensure the durability of the project achievements of a long-term strategy on geotourism development on a European level. All partners will own the products of this project which, by their publication, will become useful guidelines to similar institutions for further development of geotourism throughout Europe.

IN CASE YOU WERE WONDERING...

INTERREG stands for Interregional, the name of a EU program that supports development through funding expert collaboration between EU regions.



Representatives of the European Geoparks in Terni, Italy, Geopark

High Standards for European Geopark Services

An Evaluation Process Established

The creation of quality standards for Geopark services and products is one of the main aims of the INTERREG III C Project «European Geoparks: A tool for Geotourism Development in Europe». Representatives of the nine Geoparks participating in the project agreed to the establishment of an Evaluation process that will be repeated every three years in all Geoparks in order to keep a high quality level in their infrastructures, services and sustainable management in each territory.

The Evaluation process includes the following issues:

- European Geoparks are members of a Network with certain rules, commitments and quality standards, therefore they are obliged to maintain high standards concerning existing tourist services
- a score evaluation method should be applied in geoparks every three years in order to evaluate the existing services, to identify strengths and weak-



nesses of each Geopark and to help to the improvement of tourist offers

- a dossier should accompany the evaluation process: both tourist infrastructure and the quality of the offered service should be evaluated
- emphasis should be placed on the role of the sustainable management in each territory, as it will contribute to a better spatial, economical and cultural development of the region
- evaluation criteria should be related to geology, management, geotourism and sustainable development
- the evaluation process will be released in two stages: a self evaluation by the Geopark management and an evaluation by an independent referee. A representative of UNESCO will be included.

Project members met in Rocca di Cerere Geopark, in Enna, Sicily in March 2004 and finalized the Evaluation documents.

For more information, the Evaluation – Revalidation Process is available online at:

www.europeangeoparks.org

Project Meetings

The Network has a tradition in organizing successful conferences and project meetings which help the exchange of experience and best practice examples between geoparks. Those meetings are also a helpful tool for familiarization with other Geopark actions, services and products.

Coordination Meetings:

1st Coordination Meeting in Eisenwurzen – Austria, June 19 - 20, 2003

2nd Coordination Meeting on Lesbos Island - Greece, April 19 - 20, 2004

3rd Coordination Meeting in Digne – France, June 17 – 20, 2004

Seminars

1st Seminar on Evaluation and Revalidation Process on March 18-20, 2004 in Enna, Sicily, Italia

Thematic Conferences

4th EGN Meeting held on October 2-5, 2003 in Anogia, Crete – Greece entitled “Geoparks and local development”.

5th EGN Meeting on October 29-31, 2004 in Petralia Sotana, Madonie Geopark, Sicily, Italy.

GEOFORUMS

6th European Geoparks Network Meeting Lesvos Island, Greece • October 5 – 8, 2005

Next October, members and all interested parties will once again meet to discuss the progress of the European Geoparks Network, which has been growing rapidly since its formation in June 2000. Originally the Network was comprised of four founding territories: Réserve Géologique de Haute-Provence (France), Lesvos Petrified Forest (Greece), Geopark Gerolstein/Vulkaneifel (Germany) and Maestrazgo Cultural Park (Spain). Four years later the Network has expanded to include 21 Geoparks in 8 European countries.

This growth confirms the utility of a network in which expertise and tools linking geoconservation and sustainable development through geotourism can be shared and implemented in a structured and responsible manner. The Network's collaboration with UNESCO's division of Earth Sciences in April 2001 also emphasizes the im-

portance of organizing cooperative efforts in the field of geoconservation.

The upcoming meeting in October will continue the discussions initiated during the previous five EGN meetings and enhance the continued exchange of ideas. The meeting will also focus on examining the present state of knowledge and communication management in the EGN. New ideas in areas such as geoconservation, protection and promotion of the geomorphological and geological heritage, geodiversity, sustainable and local development or environmental education are also welcome for discussion. Furthermore the role of the European Union in supporting a sustainable development strategy will be explored along with future developments in the EGN. New members will be officially welcomed into the Network and new candidatures will be presented. We hope to see you there !

Announcements

- The 6th European Geoparks Network Meeting will be held on Lesvos Isl., Greece October 5 – 8, 2005
- The 2nd International Conference on Geoparks Belfast, Ireland September 17-21, 2006

Submission of papers:

Colleagues wishing to participate in the Meeting must fill in and submit the registration form. The title of the presentation and the abstract should be sent by 15 March 2005. Full manuscripts will be submitted by 30 June 2005. The proceedings volume will be compiled and distributed at the congress.

Registration Fee:

Registration Fee is 100 Euros. The registration fee includes the right to attend scientific events associated with the Symposium, receive Congress proceedings and participate in social events organized during the Symposium.

Students and Post-graduate students: Free.

Correspondence and contacts:

All correspondence (registration forms, abstracts) should be addressed to:

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Natural History Museum of the Lesvos Petrified Forest

SPOTLIGHTING the European Geoparks Network

Public Relations Tools

To improve the "visibility" of Geoparks and create new contacts with potential customers, communication tools and public relations activities that spotlight its attractions will be used:

- ~ an attractive **website** where all members can showcase their available structures, products and facilities
- ~ an annual **magazine** detailing INTERREG IIIC project developments and geotourism promotion will be published and distributed to universities, schools and enterprises involved in geotourism
- ~ **leaflets and posters** providing information about tourism programmes within the Geoparks will be published in four different EU Languages
- ~ a **cd-rom** that includes European Geopark information and material and emphasizes the its global image will be distributed in the tourist market in order to promote Geoparks as a new tourist attraction
- ~ finally each Geopark will have a **promotional corner** in their main information centre that publicizes all the Geoparks in the Network, their products and

the services they offer (see following)

European Geoparks Corner

The E.G. Corner will strengthen the bonds between members of the Network and contribute to the promotion of the Network and its ideas. Informative leaflets and products from all member territories will be placed in these information corners. Visitors will be familiarized with the European Geoparks Network and its members and sensitised on environmental and geotouristic issues.



In the construction of the E.G. Corner, each Geopark must concentrate on the special characteristics of its visitors. In particular, the main objectives (the image improvement of each Geopark and the promotion of services offered) remain while each Geopark creates a unique information point according to the interests of the main tourist body and also in regards to environmental features such as nature, geomorphology and climate.

Souvenirs

After visiting impressive geological sites and museums, tourists

often enjoy taking home a souvenir of some kind, and to discourage the illegal

removal of elements from natural exhibitions, the sale of attractive souvenirs in the museum gift shop is a must. Furthermore, the creation and promotion of common and regional products relevant to the Geoparks landscape contribute to the region's economic development and also to the familiarization of the public with geological science.

Similar products, already available to the public are:

- Casts of fossilized leaves, ammonites ect. representing real fossils
- Set of postcards representing impressive sights of the European Geoparks
- Bag, T-shirt and hat with the logo of the "European Geoparks Network" in different colors and sizes.

Publications – Proceedings

The proceedings of the 2001 International Symposium on Geological heritage protection and local development, held on the Greek island of Lesbos, have been published and provide significant information about Geoparks, geotourism and geoconservation. The European Geoparks magazine contains important information about EGN members and also their activities.



5th Geoparks Network Meeting

Great success for the 5th European Geoparks Meeting which was organized by the Madonia Geopark in Petralia Sottana, Sicily, Italy. More than 180 participants, from 20 Countries took part, including official representatives from UNESCO and IUGS (International Union of Geological Sciences), an official Delegation from the 8 Chinese Global Geoparks as well as representatives from all European Geoparks and potential new members.

60 presentations were made covering several issues on the protection of geological heritage, geotourism development and sustainable development policies.

The aim of this conference entitled: "Geotourism and communication – Attracting the new generation" was to discuss the present state of knowledge in geo-heritage protection, management and especially the communication strategy of the European Geoparks Network, and additionally the European Union policies in supporting a sustainable development strategy.

During the meeting the European Geoparks Network in the frame of the existing agreement of collaboration with UNESCO (Division of Earth Sciences), signed an official declaration (Madonie Declaration) with which the Network is recognized as the official branch of the UNESCO Global



Official Ceremony for the Madonie Declaration



Network of Geoparks in Europe. During the conference the participation of five new members was announced and the present Geoparks Luberon - France and North West Highlands - Scotland were officially nominated. New candidatures were

also presented and the future development of the European Geoparks Network was discussed.

At present, the Network comprises of 21 Geoparks, from eight E.U. countries.

Visit to the Salt Mine



THE MADONIE DECLARATION

BETWEEN THE DIVISION OF EARTH SCIENCES OF UNESCO AND THE EUROPEAN GEOPARKS NETWORK

Further to the April 2001 agreement of co-operation between the Division of Earth Sciences of UNESCO and the European Geoparks Network, this document re-affirms the subsequent agreement reached at UNESCO (Paris) in February 2004 concerning the UNESCO Global Network of Geoparks, that:

A European territory wishing to become a member of the UNESCO Global Network of Geoparks, must submit a full application dossier to the European Geoparks Network, which acts as the integration organization into the UNESCO Network for the European continent. Should a territory's membership application to the European Geoparks Network be rejected, or should a territory be expelled from the European Geoparks Network, then the membership of that territory in the UNESCO Global Network of Geoparks is rejected or cancelled as appropriate.

Furthermore, if in any European country a National Geoparks Network exists, then that territory must first become a member of that national network before submitting their dossier for membership to the European Geoparks Network.

At the global level:

The Division of Earth Sciences of UNESCO will ensure that within the existing International Group of Experts, the experience of the European Geoparks Network is fully recognized. This shall be demonstrated by the active inclusion of the 3 experts from the European Geoparks Network already within the International Group of Experts in the further expansion of the Global UNESCO Network.

The Division of Earth Sciences of UNESCO recognize that the office of the Coordination Committee of the European Geoparks in Digne is a fully operational office of the UNESCO Global Network of Geoparks. This information will be integrated into all information given by UNESCO and the Beijing office regarding the organizational structure of the global network. For the effective operation of the global network it is recommended that the Digne and Beijing offices regularly keep each other up to date with developments at each location.

The Division of Earth Sciences of UNESCO recognize that the European Geoparks Network is reference to follow for the creation of other continental networks of Geoparks. Therefore the Division of Earth sciences of UNESCO will use the expertise of the European Geoparks Network for the conception and development of other continental networks.

Signed

*On Behalf of the
European Geoparks Network
Nickolas Zouros*

October 29, 2004

*On Behalf of the
Division of Earth Sciences of UNESCO
Wolfgang Eder*

October 29, 2004

Agreement with UNESCO





European Geoparks Network reflections on a challenge with perspective

*M.-L. Frey,
European Geoparks Network
External Advisor*

The surprising situation

The European Geoparks Network (EGN) and UNESCO Global Network of Geoparks are on everybody's lips these days, especially in the world of earth sciences. It looks as if they are – after the active political push of asian decision takers(chinese politicians with support of UNESCO), - a result of



mere success after four years work. In fact, since 2004 even scientific bodies like the IUGS (International Union of Geological Sciences), attracted by the public acceptance of Geoparks, are not the only ones to cast their eyes on this Network. They focus on associating with the winning image and also the competence of the concept of combining geological heritage with sustainable economic development, worked on meanwhile by 21 European regions and now additionally by 8 Chinese Geoparks on the global platform. The success of the EGN was achieved over 5 to 15 years of work with regional tax finances and high quality work done by responsible geoscientists, by stake holders, by the tourism sector and by the support of regional politicians. The Network was

established as a sustainable future approach for less developed regions in Europe. A similar idea with such a tremendous success from the point of public or social acceptance had not previously appeared. The scientific community too has now accepted this new field of interdisciplinary work for geologists which has brought enormous publicity for earth sciences. This development has led to an increasing number of applicants for membership in this Network.

The challenge of creating a network of successful regional collaboration

What are the elements guiding daily existence, giving power, enforcing success and preparing a long term future of the EGN? Will the Network be strong enough to safeguard its future? The member regions have overcome obstacles arising from politics, economics, social background conditions, scientific effort and also their need to find money for financing their activities. They have also appeared on the scientific scene and presented a professional pool of results with reflections for a new field - geotourism – which is different for each region. Support is being given by the constructive discussion within the Network – partners dealing with the same questions, have different solutions because of different mentalities . This encourages members to approach their own tasks in different ways. A new stream of options also arises to improve the development of progressive new tools for school education in geography.

It seems as if it is not that long ago that this unusual approach started col-

laboration among European regions on the basis of their geological heritage to develop a new approach for a sustainable future. It was not a rapid development, even if it seems to be like this. The challenge in the modern world is to go ahead with an idea which could be pre-empted through the killing initiatives of existing hierarchies which often take over areas or "claims" others feel or think to be their own. Regions convinced by a chance to design their own futures picked up the Geoparks philosophy and actualized projects which proved their sustainable profit on different levels. The Network's success is based on the continuous work of each region, their persistence in achieving Network aims, and on the support of convinced political bodies who spend tax money on this new approach.

The question is now - what about the challenge of continuation for the growing Network? The eternal challenge is that: there exist different mentalities in Europe and they need to find new



The 'Felsenmeer' Bergstrasse - Odenwald Geopark

models to exchange knowledge and to work together. The Network partners have shown the discipline needed to work on common projects, and to be able to find a reasonable economic, logistic and officially accepted company structure. Their work shows that even today it is possible to work towards a vision which includes partners who want to contribute in an active way. The Network members have accepted the enormous task of sharing experience and not falling into actionism just to do things. Discussing ideas and issues combined with work has been up to now a wise strategy of the members. Their success is built upon having a vision, aims, friendship and confidence in those partners leading projects to exchange experience and share profit to benefit all territories.

European collaboration is not just done on paper here. This collaboration works and was successful because of the fact that the collaborators met, talked about projects and realised the importance of integrating the input from others for the common benefit. It worked on the basis of the charter of the Network which gives a framework which is flexible below the roof of long term beneficial results for everybody.

If a network consists of partners with a clear framework on structure, conditions, and common aims as well as personalities who are convinced that their work is to try to achieve the drawn up aims without having thoughts for power in mind, it works as it does in the European Geoparks Network. The collaborators work to serve the idea of a common future that benefits all territories! Our modern society seems to lack this. Or how otherwise can the surprise about the growth and success of this Network by external experts in the field of sustainable development, regional



EGN Coordination Committee Meeting - Madonie Geopark - Italy

planning as well as by the geoscientific community and national authorities be explained? We are asked to design our own future with our own energy together with our European and global neighbours by tolerating each other in the way shown by the Network. This is how to learn from each other for a common future.

What about future and perspectives for a growing network?

It is a big success for the Network, in addition to results regarding regional development, to garner the highest scientific recognition by the international scientific community as well as UNESCO's support. Their support has led to the certification of 8 Chinese Geoparks out of 48 national Chinese parks which culminated in UNESCO certification and the establishment of the UNESCO Global Network of Geoparks in July 2004. The tremendous demand for presenting the European Geopark Network piled up on top of already existing project work. As stated in the "Madonie Declaration 2004" formulated at the 2004 October conference in Madonie, Sicily, UNESCO has accepted the EGN to be the model network for worldwide continental Geopark development in close collaboration with the UNESCO-Geoparks' office in Beijing, China, as well as being the official European office of the UNESCO Global Network of Geoparks (in Digne, France). This development proves the recognition

of UNESCO in addition to the European Council.

With such a large positive response it is natural to think about aspects that may limit functioning. But it is the aspect or characteristic of examination that makes it successful and tells you there is no competition. The Network shows another way to look at cooperation that works in spite of everything! Members are directly involved in the decision making process and in bringing experience to the table to design long term futures. Members learn from each other, the Network's history and achievements. New ideas are created and new partners come together, supported by European Union programme funding. This however is not the most important fact! Here European neighbours are real, like very good friends you would never want to miss, at any time! They are reliable partners who know and trust each other. This is a superb base for our future – the only perspective!

Madonie Geopark - Italy



The Geoparks Network is growing!!!

Affirming the urgent need for European Geoparks Network values (co-operative geological heritage conservation linked to local educational and economic development) on a global level, UNESCO has committed itself to the assistance of the Network through the "Global Network of Geoparks assisted by UNESCO". This is good news for the Network since such support means increasing international recognition at all levels, from the general public to the political world. It also provides a platform for cooperation and exchange of experience between experts and practitioners in geological heritage, under the aegis of UNESCO.

In particular, on February 13, 2004 a meeting on Geoparks was held in UNESCO Headquarters in Paris. Ten members of the Scientific Board of the IGCP, representatives of the International Geographical Union (IGU) and the International Union of Geological Sciences (IUGS), and international experts on geological heritage conservation and promotion participated in the meeting.

According to national and international initiatives, like the "International Declaration of the Rights of the Memories of the Earth" (Digne, France 1991), the IGCP, IUGS, ProGeo, Malvern Group, UNESCO's Division of Earth Sciences and the Council of Europe, an international group of experts on Geoparks recommended the formation of a "Global Network of National Geological Parks (Geoparks) seeking UNESCO's assistance" in order to promote the three goals of conserving a healthy environment, educating in Earth Sciences at large, and fostering sustainable local economic

development.

During this meeting, the following items were discussed and decided upon:

- The establishment of a Global UNESCO Network of Geoparks
- The acceptance of the Operational Guidelines for application to the global Network
- The inclusion of the existing 17 members of the European Geoparks Network and 8 new Chinese Geoparks in the Global UNESCO Network of Geoparks
- The foundation of a Coordination Office for the Global UNESCO Network of Geoparks at the Ministry of Land and Resources in Beijing, China.

As a result of the formation of a Global UNESCO Network of Geoparks, the "First International Conference on Geoparks" was held in Beijing, China from June 27 - 29 2004.

The aim of the Conference was to promote the development of a global network of Geoparks through new sites, which represent exceptional examples of our planet's geological heritage.

In a special festive ceremony during the 1st International Conference on Geoparks, the Under-secretary of UNESCO Dr.W. Erdelen and the Minister of Earth and Natural Resources of China Sun Wengsheng, delivered to the representatives of the 25 Geoparks a special plaque for their integration into the Global Geoparks Network (17 from Europe and 8 from China).

About 50 international specialists attending the meeting emphasized the current state of Geoparks in the world and presented a series of case studies focusing on specific issues: methods and techniques for safeguarding geological heritage; the scientific importance of Geoparks; the relationship between safeguarding Geoparks and their rational use; and the parks' role in sustainable development of re-



gional economies.

During the conference it was agreed that the Marble Arch Caves & Cuilcagh Mountain European Geopark in Belfast, N. Ireland, would host the 2nd International Conference on Geoparks, in 2006.

Along with the Conference on Geoparks, a great exhibition of various kiosks was organized in which the 8 Chinese Geoparks, a number of the members of the European Geoparks Network, the 44 National Geological Parks of China as well as more geological parks from various countries participated. The exhibition was inaugurated by the Vice-Minister of Natural Resources of China, Mrs. Shou Ji-ahua, who visited the EGN kiosks with the General Secretary of Natural Sciences of UNESCO, Dr.W. Erdelen. The exhibition was far more than just a tourism event; it was an introduction to basic geologic knowledge and a way of exchanging experience on Geopark protection and promotion.

Twinning Geoparks around the World

The EGN representatives N. Zouros and P. McKeever proposed "twinning" between European and Chinese Geoparks on an individual basis, which was warmly accepted by the Chinese Geoparks. The agreed fields of collaboration were:

- the exchange of personnel
- the exchange of delegations
- the exchange of Geopark Information Points, exhibitions, events etc.

Zhangjiajie World Geopark

In the frame of the formation of the Global UNESCO Geoparks Network we would like to welcome our partners from the world among the pages of the European Geoparks Magazine and to present them to the members and visitors of the European Geoparks Network.

To start, present the Zhangjiajie World Geopark from China and in following issues of the European Geoparks Magazine other members of Global UNESCO Geoparks Network will be presented.

A Warm Welcome to the Zhangjiajie World Geopark

The Zhangjiajie World Geopark is located in the Wulingyuan County of Zhangjiajie City, which is in the north-western part of Hunan Province. The Geopark is in the middle of Wulingshan Mountain that joins the Yungui Plateau and the low mountain area in Hunan Province. The elevation is between 300m to 1300m and its area is 398km².

Millions of years of geological evolution have produced abundant geological relics in the Zhangjiajie World Geopark. The quartz sandstone peak forest constitutes its core landform, supported by the karst caves. These

landforms have combined with natural bridges, lakes and waterfalls to produce incomparable features. The unique scenes are so beautiful and splendid, wonderful and mysterious that it is not only a tourism resort but also a natural geological museum. The Zhangjiajie sandstone peak forest is famous for the special shape and high density of its peaks. Within an area of about 86km², between the elevation of 500 to 1100m, there are 3103 sandstone peaks ranging from tens of meters high to 400m high. These peaks form great peak clusters. Just like bamboo shoots after rain, these peaks spring from the ground straight up into the sky creating a mysterious and unique landform called a "fairylad on earth" by visitors. For this reason, the Geopark has attracted millions of visitors each year. One example of the karst caves in the park is the Yellow Dragon cave which is called "the champion of all karst caves", because it includes almost all the characteristics of karst caves.

The Zhangjiajie World Geopark is not only special for its sandstone peak forest but also for its precious fauna and flora. This park is a natural arboretum with a great number of precious plants. There are ten first grade protected plants, and 33 kinds of second grade protected plants. It is also a paradise for animals of which four kinds are first grade protected and ten are second grade protected animals. Furthermore, the Geopark is located in an area inhabited by the Tujia minority, who have their own unique traditional social customs and culture.

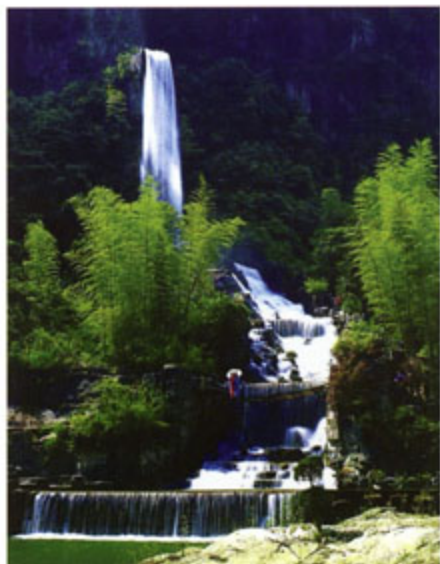
The Zhangjiajie government has carried out the project of "green mountains, blue water and peaceful environment" for a long time, and the geological relics and natural ecological

environment in the Geopark are preserved very well. The tourism foundation is basically established. There are more than 40 straight airlines to Beijing, Shanghai, Guangzhou, Hong Kong and Macao, etc. All the major cities are connected by rail. The annual reception of visitors is about 8 million. The great landforms, the natural untouched ecological system and the indigenous culture that co-exist harmoniously make the Zhangjiajie World Geopark not only an ecological tourism resort with impressive views, but also a site of great scientific research value.

The Zhangjiajie people warmly welcome you!



Sandstone peak forest with special characteristics



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Reserve Géologique de Haute-Provence • France

Welcome to the European Geoparks

"4 billions years of Earth history
to serve tomorrow"

Twenty one European geoparks developing the conservation and the valorisation of their geological heritage for a sustainable and intergraded development of their territory are pleased to welcome you.

We hope that you will enjoy your visit.



Lesvos Petrified Forest • Greece



Reserve Géologique • Italy

La Réserve Géologique de Haute-Provence



Wherever the visitor goes in the "Réserve Géologique de Haute-Provence", the history of the Earth over the last 300 million years is well illustrated.



The geological reserve covers an area of 200000 hectares of the southern Alps in France, incorporating a total of 55 communities. It can also be regarded as Europe's biggest geological open-air museum with numerous fossil-rich sites and fascinating rock formations.

Sign-posted discovery trails around the different sites can be reached from a series of interpretive centres within the reserve.

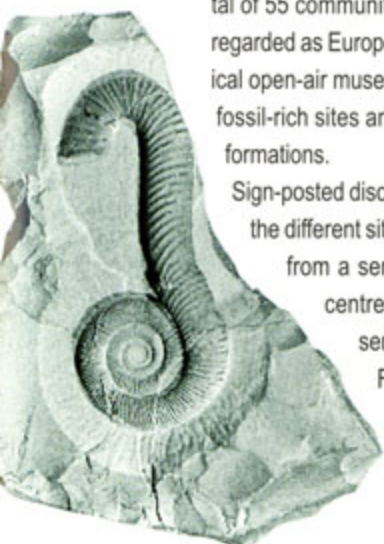
Fossilised footprints of birds can be found in

the reserve as well as fossilised plants. An extraordinary monument can be found within the attractive, wooded area of Saint Benoît, two kilometres north of Digne. Here a huge rock shelf is covered with ammonites. More than 1550 ammonites are preserved on a limestone wall 320 square metres in size.

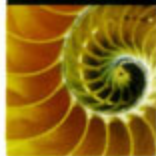
Guided tours are provided to sites where, for example, the skeleton of an Ichthyosaurus can be found while the Verdon gorge offers the opportunity to discover the beautiful landscape of Haute Provence. Verdon is the most spectacular of the French canyons with a length of 21 kilometres and cliffs of up to 700 metres in height.

On discovery tours and educational trips, students learn about the need for, and the meaning of, geological heritage and protection. Information centres and exhibitions also offer guided tours and special publications for all visitors. The museums in Digne les Bains, Sisteron and Castellane are widely used and also act as places where art and science meet. Frequent exhibitions are organized illustrating how themes of contemporary art are influenced by the relation of the artists to the natural environment.

The "Réserve Géologique de Haute Provence" acts in association with local enterprises that work together for a systematic development of tourism in zones which have so far been ignored by the public. An example has been the establishment of footpaths in three different valleys with the support of the LEADER II program.



**Réserve
Naturelle
Géologique
de Haute
Provence**



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Vulkaneifel Geopark



As the northwestern part of the "Rhenish Slate Mountains", the rolling Eifel highlands show a smooth, hilly landscape with v-shaped valleys cut into old devonian sediments. On a SE-NW striking strip 50 kilometres long and twenty kilometres wide the West-Eifel-Volcanic-Belt traverses the Eifel. The volcanoes are conspicuous, 350 eruption centres are currently known, and it is from these that the landscape received its dominant morphological shaping and the name VULKANEIFEL.

Volcanoes and maars created during a first phase of volcanic activity in the

Tertiary have been mostly eroded through the millions of years. However, in the Quarternary a second volcanic phase began 700000 years ago. The last eruption in 10000 B.P. left the Ulmener Maar, the youngest volcano in Central Europe. The concentration and variety of maar-craters give the Vulkaneifel an outstanding position worldwide. Seventy four maar-craters are known and eight craters are still filled with water and called the "Eyes of the Eifel". In some craters, bogs with their specific vegetation have taking over the former lake while others are dry or only remnants

remain. The maar sediments reveal a nearly uninterrupted stack of varvites dating back to 150000 years ago and delivering data for the reconstruction of climate, vegetation and ecology. Forty three million year old fossils found in the sediments of Eckfeld Maar have a worldwide importance, like the archetypal horse with a foetus or the oldest known honey bee. The Vulkaneifel has attracted geo-scientists for 200 years and research is still going on. Geophysical data reveal that the conditions for volcanic activity still exist under the Vulkaneifel surface.

The geological heritage is moreover manifold. Besides the volcanic features, the Vulkaneifel Geopark discloses the geological history of the last 400 million years, beginning with a large stack of lower-devonian clastic sediments overlain by the famous calcareous middle-devonian reefs. Six museums and more than 200 marked and described geological outcrops reveal scientific phenomena, while selected pathways and routes guide the visitor to the treasures of a fascinating landscape. Numerous efforts have been made to conserve the geological heritage and use it to foster economic development in a sustainable way.



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Petrified Forest of Lesvos

Location – Creation

The island of Lesvos, located in the NE Aegean Sea is one of the largest Greek islands, with an area of 1630 sq. km and a shape likened to a plane tree leaf. On the western coast of Lesvos Island the passage of time and the lapping of the sea's waves have slowly revealed the petrified remains of plant life of the distant past. Intense volcanic activity, which took place in the Northern Aegean 20 million years ago, resulted in the creation of the Petrified Forest of Lesvos. Here one can find fossilised pieces of trees - which in the remote past were once alive - standing upright or lying on the ground in a multitude of colours, with their roots and branches.

Scientists who have studied the Petrified Forest speak with wonder of the uniqueness, rarity and great scientific value of the monument. The Petrified Forest provides considerable information regarding the composition and character of paleoflora and climatic conditions of the distant past. This monument thus constitutes a natural document recording the geological history of the Aegean basin of the last 20 million years.

In February 2004, UNESCO recognised the contribution of the Petrified Forest of Lesvos on geoconservation issues and included it in the UNESCO Global Geoparks Network along with all European Geoparks Network members.

Visiting Areas

The Natural History Museum of the Lesvos Petrified Forest is located in Sigrí, on the western coast of the island and was founded in 1994. The Museum deals with all issues concerning the study, research, preservation, conservation and protection of the Petrified Forest (Law 2260/94).

Apart from the Museum, five more visiting places were created with the necessary infrastructure (refreshment stand, pavilions etc.):

- Lesvos Petrified Forest Geopark
- Geopark of Sigrí
- Geopark of Plaka
- Geopark of Skamniouda
- Geopark of Nissiopi

Geopark activities

The area of the Petrified Forest of Lesvos offers a variety of different educational subjects on geology and environmental educational activities. In particular, three educational seminars that were addressed to young unemployed people were conducted the last two years in the Museum and one more is in the making.

The participation in the European Geoparks Network enforces common activities and the realization of programmes funded by the European Community such as INTERREG IIIC and LEADER +, which target the application of a common strategy towards geotourism and sustainable development in rural areas.



Petrified tree trunk



**NATURAL
HISTORY
MUSEUM
OF THE LESVOS
PETRIFIED FOREST**

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Astroblème Châtaigneraie Limousine

The Limousin today delights visitors in its peaceful and beautiful surroundings. And yet they still bear witness to forces and processes, some gradual, some catastrophic, that have taken place during 630 million years of Earth's history: the enclosure then disappearance of the Massif Central Ocean, the collision of continents (emergence of the Hercynian mountain chain), a crater formed by a giant

are run by geocentres in three different territorial zones: the Atelier-musée de la Terre, the Centre Nature la Loutre and the Espace Météorite. Visitors can wander across a network of pathways and discover a rich variety of geological, natural, historical and architectural points of interest, as well as their folklore and legends. From flower-covered moorland, across deep valleys and tree-covered



Landscape of the Astroblème Châtaigneraie Limousine Geopark

meteorite then its erosion over the course of Ice Ages, and clay formation used by modern man for tile-making

“630 million years across 1975 square kilometres”

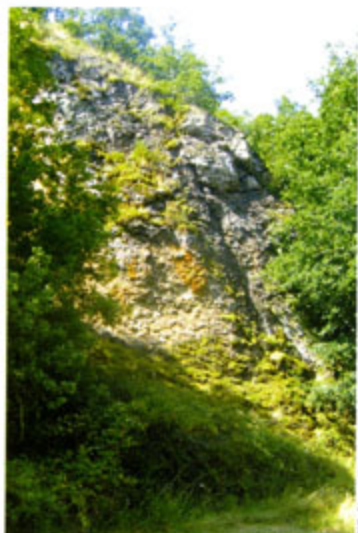
and porcelain.

The territory covers 1 975 km² and contains two major geological features. In the west of the territory there is the Rochechouart Astroblème (214 million years old fossilised impact crater), while in the east, serpentine moorland marks the remains of the Massif Central Ocean (≈ 630 million years). Both these features are now protected, and educational programs

hills, our territory is a vast countryside with numerous exposed geological formations. Exploring the area, the visitor turns into a Sherlock Holmes unravelling remarkable geological enigmas. And first among these puzzles the Rochechouart Astroblème is, without doubt, a unique formation.

Local inhabitants appreciate their surroundings, and respect their landscape, its stones and rocks. Now, to protect both the geological formations and the inhabitants' livelihood, their representatives have taken the initiative and created an organisation dedicated to the region's sustainable development.

Since being classified in 2001, the



Dir. of Impacts

Astroblème Châtaigneraie Limousine territory's management system has been redefined and restructured. Today the Local Action Group "Fédération de la Châtaigneraie Limousine" is responsible for finance and administration, while the Association Pierre de Lune coordinates scientific and educational activities.



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Psiloritis Natural Park

Psiloritis Natural Park is located on the Greek Island of Crete, in the southern Aegean Sea. It has an area of 1159 Km², with 157 settlements and towns and a population of about 42234 inhabitants (population density 36.4 inh/Km²). The park, comprised of the Psiloritis mountains and its northern coastal zone, combines fas-

many foreign universities come for basic scientific research and education. In the Geopark all kind of geological structures are visible from a small to regional scale. Big faults with excellent and imposing fault surfaces, fossil sites, caves, impressive gorges and plateaus that host many native species of the island, unique fold as-



Zoniara cave in Psiloritis ME • Photo: K. Pargamos

inating geology with its unique natural environment (part of the area is participating to the Nature 2000 network), long history, individual customs and the outstanding Cretan civilization.

Within the territory of the Geopark, the

sociations and geomorphologic structures have sustained the culture, tradition and customs of the inhabitants for thousands of years.

As a member of the network, the Geopark is developing several sub-parks, each one presenting a major



Zoniara lake • Photo: G. Patsikas

whole nappe pile of Crete, and the majority of the rock types of the island are presented in excellent outcrops and cross-sections. It is an area of high scientific value where every year

geological feature of the area. The Psiloritis Karstic Landscape Park deals with high mountain morphology and landscapes including high plateaus, caves (ie, Idaion Andron

cave where Zeus grew up) and cultural sites. Talea Ori Stratigraphic Sequence presents many rock types, weathering structures, folds (such as the Vossakos fold succession) and fossils (such as the Permian corals) through a 200 million year journey to the early geological history of the island. The Basin to Range Park exhibits the transition from high mountains to low lands and from natural environment to human civilization. The SpeleoPark is planned for the Psiloritis mountains as an individual park in which the main aspects of speleology will be properly demonstrated for all kind of activities. Many other geotopes located within the Geopark are treated as individual sites presenting main features of the geological history of the island.

Recent studies funded from Network common projects aim to establish local info-offices, routes and trails that will join together geotopes, sub-parks and other monuments of the area, as well as a uniform style of labeling and presentation. A new educational project for school children started this year emphasising the role of landforms (caves, plateaus etc.) to the high endemism of the area.

In the Psiloritis area, mythology, tradition and nature meet together in an excellent combination to declare that it is an environment of gods and humans or the nest of the real Cretan spirit.



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Naturepark TERRA.vita

The Naturepark is located in north-western Germany and stretches across the mountain ridges of "Teutoburger Wald", "Wiehengebirge", and the "Ankum-Bippen-Hills".

What is so special about this landscape concerning the preservation of the geological heritage in Europe? It is



the documentation of the earth's history from the carboniferous age about 300 million years ago up to today, nearly without gaps, in a narrow area in this region. By means of an enormous variety of different sedimentary rocks, which are accessible in natural or artificial openings, this huge area can be investigated, reconstructed and explained to visitors in an accessible way.



One example for an impressive opening in carboniferous rock is the quartzite-quarry of the "Piesberg" north of Osnabrück, housing an industrial-historical museum with an accessible black coal adit of the 19th century.

The dinosaur-footprints of

Barkhausen in the "Wiehengebirge" left by altogether eleven dinosaurs of two different species, appear in the upper Jurassic age and are, in this constellation, unique in Europe. The footprint-quarry is the most important Geosite of the naturepark.

The Rocks of Dörenthe are an outcrop of lower cretaceous sandstone. As they are a Geosite of natural origin, they are a touristical highlight in the western part of the naturepark.

The "Sea of Rocks" on the "Gattberg", including the so-called "Butter-Stone" (a huge erratic block), gives a sense of the enormous power of the glaciers that once moved through the naturepark area.

The "TERRA.park" is an exhibition and activity facility of two hectares, where visitors are given a geological overall view by the naturepark-team and where educational programs for schools are offered.

Because of its geological importance, the Naturepark area is well explored and mapped. It is a popular excursion destination for scientists from all over Germany and the Netherlands. A current registration of geotopes completes the scientific list of existing geological objects. The main target of the Geopark activities are further protection measures for geotopes as well as enlarged public relation activities, allowing visitors as well as inhabitants a better understanding of the connections of earth history in different ways.

The 1999 extension and development of the Geosite "Dinosaur Footprints" into an open air museum, was one important step in this direction. This measure was useful for the protection of the footprints and for the didactical translation of scientific facts at the same time. Activities of this kind will

increasingly influence the educational institutions of the region, making geological heritage a central topic of their work. Touristical offers like thematic bicycle-routes, action-tours for groups and thematic maps are being worked out by the naturepark administration itself at this time.

In order to increase public access to



geosciences, themes like the history of mining, archaeology, and the current work on mineral resources are being worked out again for integration in these touristical offers. As a result, first contacts with local enterprises have been initiated. Within the scope of support programmes, object-contracts and practical trainees, students and job-starters are integrated in the work on naturepark products.

In 2004, a set of 17 cycling-routes called "TERRA.trails" was published.

The information-pack provides a printed guide and map for each route, and focuses on the Geopark items, earth history, archaeology, coal and ore mining as well as architecture.

Since 1998, cooperation with a region in the Netherlands has been going on, and a bilingual ice age trail was opened in 2003.

TERRA. vita

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Copper Coast Geopark

The Copper Coast comprises five independent communities working together, each developing its own resources but are collectively in 2004-'06 developing joint infrastructural de-

velopments and presentation with the communities:

- Fenor has opened up its bog with an elevated walkway plus interpretative panels of the flora and fauna to be found there. Here also is the



Dramatic effects of sea erosion

Centre with emphasis on mining. Bunmahon also has a Blue Flag beach with striking geological effects on either side nearby. Dramatically sited on the cliff-top road to its east is the 19th century mine engine complex which is being preserved and presented.

- Stradbally, a strikingly pretty village, was European Entente Florale gold medal winner in 2003. Its various antiquities include the remains of a medieval church with tower-house, and an 18th century lime kiln. The cliff fringed Ballydwan beach lies east of here (photo left) and its own cove is unique in its tidal range and in the river that runs beside the beach. The central feature of the village is the large geological sundial created in 2002.



Here you can span 100 million years with your arms

velopment and presentation with European INTERREG IIIB and IIIC funding. Adding to a common set of interpretative pamphlets will be an interactive DVD explaining the evolution of the Coast-line. Stills from this will interpret what visitors are looking at from various viewing points along the coast

The existing geological garden is being up-graded to further enhance the understanding of visitors as to the geological forces that created the Copper Coast. A new centre is also being created at the engine house complex which served the 19th century copper mines from which the Geopark derives its name. Not only is the mining history being interpreted but its geological and mineralogical context as well. A spiral staircase within the main building will bring visitors through geological time to a panorama of the present landscape with cliffs stretching into the distance against the backdrop of the Comeragh Mountains. The following are the amenities and current features developed by each of

Copper Coast Mini-farm with its rare domestic animals plus some exotics. To its south is the island-fringed beach at Kilfarrasy encompassing a wide range of geological and morphological features. (photo up right).



Turning Copper occurred in the setting sun

- Annestown-Dunhill has a dramatic medieval castle and church owned by the community plus a major ecological wetland scheme along its tranquil river Ann. Annestown, as well as being a pretty village with a nice beach, also boasts one of the largest sea-arches in Ireland (photo above).
- Boatstrand to Bunmahon, besides having harbour and beaches, has a geological garden beside the tidal river Mahon, as well as a Heritage



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Marble Arch Caves

A Global Geopark in the border region of Ireland

The distinctive sandstone summit ridge of Cuilcagh Mountain dominates the countryside of County Fermanagh in Northern Ireland. Cuilcagh was heavily glaciated during successive Ice Ages and has fine geomorphology, or weathered erosion features, including impressive landslides and extensive boulder fields. The mountain has rugged, panoramic scenery that is popular with visiting hillwalkers and rock climbers.

Cuilcagh is rich in globally and nationally rare habitats, ranging from ancient forest to mountain heath supporting internationally important flora and fauna. The mountain displays one of the best areas of active blanket bog in Europe and contains Northern Ireland's finest upland karst, or limestone, landscape.

The Cuilcagh blanket bog is of international scientific importance as a priority habitat under the European Union's Habitats Directive. Blanket bog is globally rare and is being destroyed around the world by damaging human activities. Approximately 25% of the world's active blanket bog is confined to the Atlantic seaboard of Ireland and Scotland so the Cuilcagh bog is clearly of world importance.

The lower limestone slopes of Cuilcagh Mountain boast large cave systems including Marble Arch Caves, one of the most significant caves in Britain and Ireland. These caves were first explored in 1895 by the famous French cave scientist Edouard Martel who lectured in Speleology at the Sorbonne University in Paris. Fermanagh District Council developed Marble Arch Caves as a tourist cave in 1985 and they are now world-famous as one of Ireland's leading tourist attractions, having attracted one million visitors from more than 100 countries.

Cuilcagh Mountain Park opened in 1999 and is managed by Fermanagh District Council in conjunction with Marble Arch Caves. The Park protects this internationally important area of blanket bog and opens the landscape for sustainable tourism and environmental education.

The Geopark offers a wide range of environmental education and field studies to schools, universities and adult groups.

It works closely with government agencies and wildlife charities to develop sustainable tourism in the region. In the late 1990's, Fermanagh co-operated with both the Geological Survey of Northern Ireland and the Geological Survey of Ireland to devel-



op Landscapes From Stone, a tourism initiative based on the superb diversity of the landscape and geology in the northern half of Ireland. Marble Arch Caves have long been recognized for their successful management approach to conservation, development, and education with tourism. These efforts were rewarded in 2001 when Marble Arch Caves and the Cuilcagh Mountain Park became the first UNESCO European Geopark in the United Kingdom.

Marble Arch Caves



European Geopark

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Madonie Natural Park

The Geopark of Madonie is situated in the Province of Palermo along the Southern Appennini Mountains Chain in Sicily. Within its territory there are 22 local councils, and the majority of them (15) are part of the Regional natural park of Madonie as well. This territory in Sicily, among the most beautiful of landscapes, is of special interest from a geologic and geomorphologic as well as from a didactic point of view.

In this area, the oldest Sicilian mountain can be found, as well as traces of the whole geological history of the island. This mountain territory is mainly composed of limestone and limestone-dolomitic with interesting morphologies of a karstic nature and presents also a very rich and rare cultural and natural heritage. And this is why all the different plans and programmes for local development (LEADER+, the local AGENDA 21 etc.)



are essentially directed towards sustainable development strategies connected with a mindful use of the landscape and the cultural heritage.

The area became part of the European Geoparks Network in 2001 after the candidature was presented by the local LAG with the full support of the Natural Park of Madonie. Both local entities are coordinated to deal with this issue. The LAG deals with activities within the international network and local activities of territory promotion, while the Natural Park manages the protection and the touristic use of the territory.



Being a member of the European Geopark Network is a very important element for our territory because of the very strong dynamic of collaboration and exchange of experiences between the Network members.

The Geopark activities are managed by a coordination group (both presidents of the LAG and the Natural Park, one geologist and one expert of local development). This group is also supported by the Department of Geology and Geodesy of the University of Palermo, which gives the scientific support for what concerns didactic



and promotional activities. In this phase, the Madonie Geopark is fortifying its educational structure by opening a geological museum especially dedicated to young people, and is intensifying its promotional activities.



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Rocca di Cerere Geopark

The European Geopark "Rocca di Cerere", was established in the middle of Sicily in 2001. It is a rich environment with the largest part being the "chalk-sulphur" plateau, and the quarzarenitic peaks of the Flysch Numidic region where, since the Palaeolithic ages, the inhabitants sculpture the landscapes with their daily toils. Farmers, shepherds, miners, warriors, paupers and kings, women and men, are all here. All these lives are still in every little stone that Demetra guards day by day with her maternal eyes.

The gypsum-sulphur plateau was caused by the Messinian crisis, when, about 7 million years ago, the Tetid ocean began its great regression. The chemical sedimentation of the salt formed a very large deposit of several salts, in which the gypsum deposit is the most important.

The Erei hills, from their highest peaks, of a flyschoid formation, and a fantastic morphology sculptured by erosion, lay as steps of large portions of "Marne" (clay), chalks, and trubi, and are sometimes covered by calcarenitic plateaus, with cuestas frequently collapsed to their sides.

In this country, since the ancient times, the miners have opened galleries in search of sulphur minerals.

This landscape was an important extraction site from the prehistoric ages. Here man began to differentiate the salt rocks of natrium clorure from the potassic salts. Certainly from Minoan – Mycenaean ages, the inhabitants of this part of Sicily, exported sulphur tables to the rest of the Mediterranean sea as recent archaeological research in Monte Grande and Milena now demonstrate. The Romans condemned the ancient Christian people "ad metalla" in the central part of Sicily and several hundreds of slaves died in this land from the 1st to the 5th centuries A.C.

In the modern age, geological and mineralogical research began to open

mines in deep stratification of the sulphur plateau and the Sicily become the first producer of sulphur minerals in the world. With the collapse of the Sicilian sulphur market and the gradual dismantling of the Sicilian Mining Company (EMS), the mining complexes were abandoned and nowadays it looks as if the workers, the "carusi" of the past, had run away just a few hours ago, leaving on the ground heaps of raw minerals, tools, pay books, cars and underground equipment. Only the potassic salts mining sites (Pasquasia, Corvillo) survived into the '80s, but with the introduction of Ukrainian salts in the occidental market, these closed too. The park, which manages these important sites, is formed by nine towns and contains four natural reserves and the only mineralogic park of Sicily.



In The Rossomano, Grottasura Bella Natural reserve, the strange formation of the "encanted stones" or "dancing puppets": calcarenitic rocks that the erosion has sculptured into a circle of human and animal forms. Traditionally the Sicilians believe that these rocks are a circle of witches petrified by divine intervention during a Sabbath.

Landscape of the flyschoid peaks of Mount Altesina, the highest mountain of the Erei chain




**Rocca di
Cerere**

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GeoLine in the Nature Park Eisenwurzen

The Nature Park Eisenwurzen, located in the Austrian province of Styria, is part of the Northern Calcareous Alps. Geotourism has a long tradition in the area. As early as 1892 the Kraus Cave of Gams, one of the most splendid gypsum-bearing caves of Europe and the first one in the world with electric light, was opened to the public. In recent times, the adventure of experiencing 250 million years of Alpine history has given new impulses to tourism in the region, which has suffered from extreme depopulation in the past decades.

Scientists have been aware of the magnificent geology of the region since the early 19th century. It might be mentioned that one geological time interval (about 235 to 230 million years ago) of the Triassic period has been named the Anisian stage after a section of rocks close to the Enns River, which was called Anisius fluvius in Roman times. Geotouristic activities are the domain of GeoLine, the geological branch of the Nature Park. These comprise two permanent exhibitions: the museum of the Second Vi-

enna Water Supply Line, which benefits from karstic springs in the area, and the GeoCentre of Gams, which provides an overview of the regional



The Eisenwurzen Nature Park provides insight into fascinating alpine geology

geology. The GeoTrail and GeoBike, a demanding bicycle trail, provide in-situ evidence of geological phenomena: rocks, fossils as well as formations reflecting the incredible forces at work during the building of the Alps. Traces of the Great Ice Age are prevalent. The Waterloch Gorge, which originates at a large karstic spring, provides deep insight into the geological activities of water. This most powerful

of all geological agents may be explored in the Water Park of St. Gallen and at GeoRafting, which combines science with adventure. The GeoWorkshop serves all activities related to the preparation of geological items.

The recognition as a member of the European Geoparks Network in 2002 has provided new momentum. Fund-

ed by the EC programme LEADER+, challenging geotouristic projects will be established in all communities of the Nature Park during the next three years. This will be an important step towards a sustainable development of the region.



With more than 100 stations the waterpark is the major family resort of the Eisenwurzen region



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Geopark Bergstrasse - Odenwald

The European Geopark Bergstrasse-Odenwald is situated in the southwest of the Federal Republic of Germany. The Geopark territory takes in approximately 3200 km², between the Rhine valley in the west and the Main valley in the east. The region is bounded to the south by the Neckar valley and to the north by the UNESCO World Natural Heritage Messel Pit.

provides a unique window into Earth's history, that gives insight into the dynamic processes of our planet through its typical rock formations, and characteristic surface morphology.

Geotourism

Based on its unique geological background, the Geopark has developed a networking of experience-oriented geotourism. This includes facilities as

ly frequented hiking areas, the rangers put up information stands with maps and helpful information for visitors.

Program selection:

Experience the landscape

Geopark enjoyment walks

Fascinating wood

Time train

Experimental archaeology

Between granite and sandstone

Fascinating plants and herbs

Between day and night

Geopark information and products (selection)

- Annual Geopark program (more than 250 events, regional contributions and cooperations)
- Individual Geopark tours
- Individual environmental educational programme
- Geopark News (twice a year, actual projects, events and news)
- Geopark flyer (several topics on Earth history, nature and culture)
- Geopark vine
- Geopark champagne
- Geopark hiking maps (1:20.000, collection of 16 single maps)



"Between granite and sandstone" – fascinating and variegated more than 500 million years old Geopark landscape in the center of Europe (Photo: T. Brandt)

Geological base

The Geopark territory includes a unique sequence of more than 500 million years of eventful global history in the centre of Europe. This is already indicated in the motto of the Geopark: "Between Granite and Sandstone – Continents on the move". Solely in central Europe, the region between Rhine, Main and Neckar exposes not just a great variety of magmatic and sedimentary rocks, but also the tracks of two global tectonic events: first the magmatic arc of the Variscian Orogen, a former trench of a continental collision, and secondly, the "Oberrheingraben" (Rhine Graben) which represents an initial phase of a breaking Europe during Alpidic orogenesis. Thus, this region

well as geotouristic products. The region supports the conception of sustainable and attractive geotourism activities, which are regarded as a long-term joint task of the Geopark network. The Geopark's visitors information system spans the range "between granite and sandstone", and by means of "discovery areas" develops individual profiles of partial landscapes, each of which present the characteristic mutual relationships and developments in the geological cultural landscape.

Geopark offers

The Geopark-rangers, 30 well trained bio- and geoscientists offer guided landscape adventure tours, and environmental and adventure-based educational activities. Additionally, in high-



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North Pennines AONB

Area of Outstanding Natural Beauty



In June 2003, the North Pennines Area of Outstanding Natural Beauty (AONB), one of the most beautiful, remote and unspoilt places in England, became Great Britain's first European Geopark. The rocks and landscapes of the North Pennines have amazing stories to tell, of moving continents and tropical seas, of molten rock and ice sheets and of minerals and the men that mined them.

Britain's first "European Geopark"

This is a high, wild landscape of open moorland, tumbling rivers and green dales, stretching across 2000 square kilometres of County Durham, (Cum-

bria) and Northumberland. It is the second largest of the 41 AONBs in England and Wales, landscapes recognised by Government as the equal of the National Parks. It is noted for its diversity of wildlife and for its nationally recognised scenic qualities, but it also has a world – class geological heritage. This geological interest, coupled with past and planned effort for its conservation, led to the Geopark designation being conferred on the area.

In the year since designation, the North Pennines AONB Partnership Staff Unit, which manages the Geopark designation locally, has been working closely with the British Geo-

logical Survey to produce the first Geodiversity Action Plan (GAP) for a UK protected landscape. As well as being the first comprehensive audit of the geology of the North Pennines AONB, it sets out a framework for action for the conservation and interpretation of many of the area's key sites and features of geological interest. The plan identifies a series of "North Pennines Geodiversity Sites", which will be monitored by the AONB Partnership and conservation action taken where required.

The AONB Partnership Staff Unit has also been working with local organisations from across the North Pennines to develop the area's first geology festival and is developing transnational and local projects which will further conserve and interpret the area's rich geological heritage.



NORTH PENNINES AONB PARTNERSHIP

Working together for the North Pennines

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The Abberley and Malvern Hills Geopark

The Abberley and Malvern Hills Geopark, is located within the West Midlands region of the United Kingdom. The boundary of the Geopark falls within the rural counties of Herefordshire, Gloucestershire, Shropshire and Worcestershire and covers an area of 1250 square kilometres.

The Abberley and Malvern Hills form the backbone of the Geopark, illus-



Herefordshire Beacon. Iron age Hillfort
The Malvern Hills

trating over 500 million years of Earth history. Stratigraphy from Precambrian to Jurassic and Quaternary is represented with almost complete successions of the Silurian and Triassic periods present. The Malvern structural axis with its associated faulting and folding runs in a north south direction and is the major influence on the geology of the Geopark

The geological and geomorphological significance of the area has been recognised since the days of Murchison in the early 19th century. There are 13 geological Sites of Special Scientific Interest (SSSI) and 80 Regionally Important Geological and Geomorphological Sites (RIGS). The active and well-established Earth heritage groups carrying out recording and conservation are Herefordshire and Worcestershire Earth Heritage

Trust, Gloucestershire Geoconservation and the Shropshire RIGS Group. These groups provide an extremely successful educational programme, which is based on geology and landscape trails and guided walks. The trails illustrate many aspects of geology and geomorphology. Guides also contain supplements with information about archaeology and biodiversity along the trails.

Another successful element of the public awareness programme is the 'Rock and Fossil Roadshow'. During these events school children and family groups enjoy making fossil replicas and Silurian seascapes, discovering the beauty of fossils, doing fossil rubbings and identifying rocks and minerals. The rock and fossil roadshows visit community centres and museums throughout the Geopark.

There are many other attractions within the Geopark. For example, the Malvern Hills contain two major hill forts used by Iron Age tribes (c800BC to 43AD). There are a further two within the Abberley Hills. Also, the Wyre Forest coalfield forming the northern part of the Geopark has a rich mining history stretching back many centuries.

The area also displays exceptionally strong links between its landscape and social history. One of England's most celebrated composers, Sir Edward Elgar, was born on 2nd June, 1857 within the Geopark. His birthplace, now a museum, is close to the Malvern Hills. It is widely acknowledged that the music of Elgar was inspired by the landscape of the Geopark.

The Partnership that founded the Geopark consists of the Abberley Hills



Educational program. Rock and fossil Roadshow

Preservation Society, English Nature, the Forestry Commission, Gloucestershire Geoconservation Trust, Herefordshire and Worcestershire Earth Heritage Trust, Scenesetters and University College Worcester. This Partnership is working closely together to promote geotourism and to encourage a greater awareness of the significance of our Earth heritage and the evolution of the natural landscape.



Geology and landscape trails



Abberley and Malvern Hills Geopark

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www.worc.ac.uk/geopark

Maestrazgo Cultural Park



The "Parque cultural del Maestrazgo", covers an area of 270,000 ha and lies between Zaragoza and Teruel in the catchment of the Rio de Guadalupe. The area belongs to the Cordillera, a dry mountain land characterised by hot summers and cold winters and with deeply incised yellow-brown valleys. The area lies in the former kingdom of Aragon and in the Middle Ages it was named "Maestrazgo" by the "maestres", a military order which administered this region. There are six centres within the Park: the Geological Park in Aliaga, the History Museum in Mas de als Matas, the Cultural Park of Molinos, the Centre for Science of Environment in Villarlengo, the Palaeontological Park in Galve and finally the Sculpture Park in Hinojosa de Jarque.

The little village of Aliaga, 50km north-east of the town of Teruel, is interesting because it lies at the nodal point of two geological folds that followed one another. In the Mesozoic, 220 – 65 million years ago, an embayment of a warm sea periodically covered this area. During these times the bottom of the sea was colonized by corals and other invertebrate animals. At other times, the sea retreated and rivers deposited sediment here. 65 million years ago during the formation and

folding of the Pyrenees a geological saddle, or anticline, orientated approximately north-south, was formed. Subsequently a geological depression, or syncline, running nearly towards east-west was created. After that the Guadalupe River and its tributaries cut deep into these structures. Harder rocks like limestone, dolomite



and conglomerates were resistant to erosion and are now preserved as mountain ridges and cliffs. Those parts of the landscape underlain by clay, marl and sandstones were more easily eroded and now account for the more gentle slopes of the area. The geological and natural heritage of the region will be developed in the Geological Park of Aliaga by using an ed-

ucational path with eleven special points, where ceramic boards with drawings and text explain the facts to interested amateurs, pupils, students or scientists. In the Palaeontological Park of Galve, fossils and printings of dinosaurs, as well as life-sized replicas, can be examined at in awe. As a result of these projects the Geological and Paleontological Park are now known all over the world including specialists and scientists who regularly visit that region.

Location:
 North-east Spain,
 Iberian Mountains,
 Between Zaragoza and Teruel

Publications:
 Leaflets on Molinos Park Cultural Pueblo Magico
 Book: Guia del Parque Geologico de Aliaga (J.L. SIMON, 1998)
 Postcards – Set Palaeontological



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Geopark Kulturpark Kamptal

The "Geopark Kulturpark Kamptal" is situated in the Lower Austria, about 60 kilometres northwest of Vienna. The area stretches along the river Kamp to the south for about 40 kilometres and in the west – east orientation for about 30 kilometres.

The highlands are dominated by the Kamp River Valley and the Manharts-Mountain chain. Basically it is a hilly area with altitudes not exceeding more than 500 meters and two main basins. In general this rural area is dominated by woodlands and agriculture, the lower Kamp valley and the eastern flanks of the Manharts-Mountains are well known vine growing regions. The total area consists of about 900 square kilometres.

The highlands of Kulturpark Kamptal are basically part of the Bohemian Massif, with its western Moldanubian and its Eastern Moravian tectonic units are made up by a colorful variety of plutonic, metamorphic and sedimentary rocks of Proterozoic to Permian (possibly Triassic) age. Erosion during the Mesozoic and Cenozoic wore down the once high mountains to the present highlands. The crystalline rocks are transgressively overlain by richly fossiliferous marine sediments of Early Miocene age, which originated along the northern coastline of the Molasse Sea. Middle to Late Miocene marine and fluvial

deposits, Pliocene and Pleistocene loess and cave deposits and contemporary faunal and floral elements in these deposits allow us to reconstruct the entire Proterozoic to Recent geological history of this region.

The overall objective of Kulturpark Kamptal is to convey to visitors and to the local population a comprehensive and interconnected pictures of this region, beginning with its geological evolution, the first arrival of man, the development of culture and the transformation of the original natural landscape to today's cultural landscape. These objectives are summarized by three words: Nature - Man - Culture.

Nature - Man: This concept provides the visitor and the locals with the geological history of the "Geopark Kulturpark Kamptal" region from the Proterozoic to Recent, including its minerals, rocks and fossils; examples that demonstrate the interrelationship of man and culture by emphasizing that rocks are a principle resource for human settlement and evolution in terms of both raw materials and soil the interface between lithosphere and biosphere, and the fact that geology and weathering produces the soil and thereby shapes our natural and cultivated fauna and flora and that one learns to see the continuous transformation of the natural landscape with its natural fauna and flora into our cultural landscape with its biodiversity challenges.

Man - Culture: The first Paleolithic hunters in this area arrived around 30.000 B.C. From then on we can follow the evolution of the population, settlements and culture. The still-intact historical reminder of this development of settlements and culture make up this aspect of Kulturpark Kamptal. The cultural and social structure of Man and Culture are treat-

ed in two phases: from the Paleolithic to the Slavic period to around 900 A.D. and from the Babenberg period to the present.

"Geopark Kulturpark Kamptal" is managed by a tourism association that includes a scientific advisory board and an operational organisation.

Three visitor centres have been established which form the entrance gates into the area. They mirror the three main objectives Nature – Man – Culture. These centres are built as a museum and tourist information as well. Spread all over the region there are 43 points (PI) of interest which can be visited by guests. Nineteen of these PI deal with geological history, five combine archaeology and geology, one stresses wine growing and geology and one focuses on "living fossil" plants that are still growing in the Kulturpark Kamptal.



Kogelsteine. Witnesses of stone from the depths of the earth.



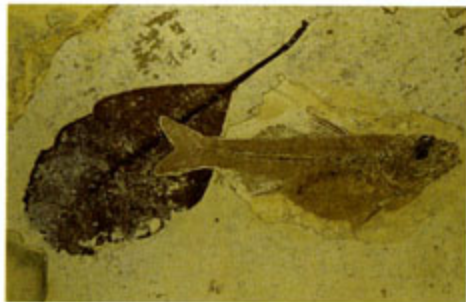
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Luberon Geopark

NEW MEMBER

Exceptional fossilization, unusual landscapes, exploitation of mineral resources: a territory project around geology...



Oligocene fish and leaf (T. Starcke)

Situated in Provence, next to the towns of Aix-en-Provence and Avignon, the Luberon Geopark covers a surface area of around 1,840 km², this territory is inhabited by more than 156,000 people.

Oligocene fossiliferous deposits are one of the major geological interests of this territory. Vertebrates (mammals, birds, reptiles, amphibians and fish), insects (dragonflies, butterflies...) and plants (leaves, seeds, flowers...) are exceptionally well-preserved inside platy limestones.

Other sites reveal fossil bones of primitive mammals (horses, elephants, gazelles, etc.) but also footprints of rhinoceros, hyenas, young goats and birds, preserved on the surface of limestone slabs.

The landscapes of the Luberon constitute an important element of the biodiversity of this region. One of the most remarkable is the ochre massif, which offers a landscape of cliffs and gullies, ranging in color from dark red to gold yellow. The grey marl hills around the town of Apt are another unusual landscape, they constitute a part of the Aptian stage stratotype described by Alcide d'Orbigny in 1840. Great natural sites such as the Oppedette gorges and the Véroncle gorges also contribute to this diversity.

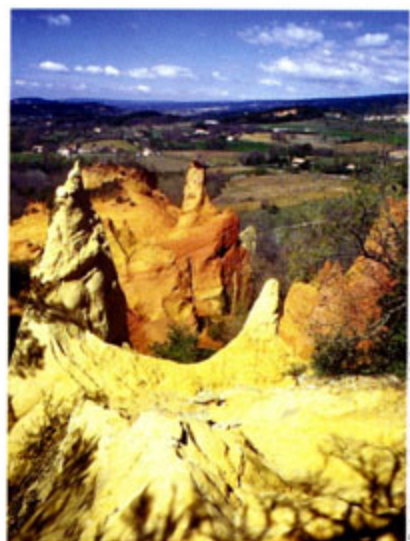
Finally, the exploitation of mineral resources (ochres, lignites, clays, limestones...) has deeply marked the region, this is attested by several ovens, quarries, factories, etc.

The managing structure of the Geopark is the Luberon Park. It is one of the 44 French regional nature Parks. It regroups 70 communes, which organize themselves around a concerted project of sustainable development, based on the protection and valorization of its natural and cultural heritage. Since 1996, the Luberon Park is a member of the worldwide network of Biosphere Reserves. It is also one of the first signatories of the European charter for sustainable tourism within protected areas (2001). In this respect, the Park is committed to encourage a sustainable vision of tourism, to co-operate with local stakeholders whether public or private and to open tourism to more beneficiaries (youngsters, seniors, disabled visitors...).

Commitments of the Park with regards to geology

On the Park's initiative, a geological nature Reserve was created in 1987 in order to prevent the pillaging of several fossiliferous sites. In 1996, a protection perimeter was set up over the territory of 27 communes. With regards to geology, the projects of the Park concern the protection of deposits, research, the sensitizing of the general public and the valorization of its geological heritage. In this respect, on-site information panels were set up, site-watching is organized and information leaflets are widely handed out. Scientific studies and excavation works are regularly carried out in partnership with universities.

Geology is valorized through on-site trips, conferences, temporary exhibitions and also books aimed at the



Rock chimneys in the ochre massif (PNRL)

general public. As far as school children are concerned, free educational animations are offered to the Luberon school classes, they are supervised by mountain guides. The Park also takes part in the sensitizing and training of tourist operators, teachers, educators, in the field of geology.

Several exhibition facilities dealing with local geology and the exploitation of mineral resources were set-up in some villages of the Luberon.

New projects are currently being designed (equipments, publications, footpaths...) for a wider public. The stake is now to create a proper networking of these equipments and communication tools, resting on an enhanced partnership with tourism professionals.



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The North West Highlands European Geopark

NEW MEMBER

The North West Highlands of Scotland became a European Geopark at the annual meeting of the European Geopark Network in Sicily, in October 2004. The Geopark is located in the far north west of Scotland. The 2000 km² area encompasses some of the finest mountain and coastal landscapes in Britain and contains a wealth of classic geological localities. The rich natural heritage is recognised in the high number of designat-



ed area: two National Nature Reserves, 54 Geological Conservation Review sites, 26 geological Sites of Special Scientific Importance, 17 Special Protection Area sites and 11 Special Areas of Conservation.

The area also contains many historic and archaeological sites, ranging from Iron Age defensive towers, remains of Norse settlements to castles and houses related to the Lordship of the Isles.

Geology

The Geopark contains some of the most important and diverse geological and geomorphological features in Britain. The unique landscapes strikingly reflect the underlying geology. Geologically, the area is dominated by the internationally important Moine Thrust Zone, which runs from north to south.

To the west lies the 3000 million year old Lewisian Gneiss Complex, containing some of the oldest rocks in Europe; these rocks are characterised by the typical rugged 'cnoc-and-lochan' landscape. Several 'inselbergs' occur on top of the Lewisian Gneiss; these are formed by the circa 1000 million year old Torridonian red sandstone. Other inselbergs are capped by white Cambrian Quartzite – often covered in vast blockfields, since the quartzite was highly susceptible to frost-shattering during more recent Ice Ages. East of the mountains is the wild, boggy country underlain by the enigmatic Moine rocks. Tell-tale signs of the past ice Age can be found throughout the area. The coastal scenery also reflects the geology. Where the coast is formed by Lewisian Gneiss there are numerous small coves and craggy headlands. In contrast, high cliffs and occasional sea stacks such as the Old Man of Stoer characterize coast formed by Torridonian sandstone.

The North West Highlands is a key area in the history of geological science. During the 19th century, the so-called 'Highlands Controversy' raged over the relationships of these rocks, ending with the recognition of the complexities of the Moine Thrust Zone, now recognised as one of the most important structures of the circa 400 million year old Caledonian Mountain belt. Hundreds of geology students from around the world are still trained in the region every year.

Interpretation

Geological interpretation that helps the visitor to appreciate and understand the geological processes in the



area is already well developed. There are two Tourist Information Centres with geological displays and one 24 hour visitor centre at Knockan Crag, which is solely dedicated to the Moine Thrust. Twelve interpretative panels occur at viewpoints. An active Highland Ranger Service organises guided walks throughout the summer.

Future Action

The Geopark will be managed by Geopark Action Group comprising advisors from the Highland Council, British Geological Survey, Scottish Natural Heritage, and the local Enterprise Company. A Geopark Working Party comprises a range of other stakeholders, including landowners, the tourist boards and tourist centres, the Highland Rangers and local history groups. A Geopark officer will be recruited soon. In the meantime, contact Maarten Krabbendam and Gordon Todd for more information.

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The European Geoparks Charter

Definition of European Geopark

- 1 A European Geopark is a territory which includes a particular geological heritage and a sustainable territorial development strategy supported by a European programme to promote development. It must have clearly defined boundaries and sufficient surface area for true territorial economic development. A European Geopark must comprise a certain number of geological sites of particular importance in terms of their scientific quality, rarity, aesthetic appeal or educational value. The majority of sites present on the territory of a European Geopark must be part of the geological heritage, but their interest may also be archaeological, ecological, historical or cultural.
- 2 The sites in a European Geopark must be linked in a network and benefit for protection and management measures. No destruction

or sale of geological objects from a European Geopark may be tolerated. The European Geopark must be managed by a clearly defined structure able to enforce protection, enhancement and sustainable development policies within its territory.

- 3 A European Geopark has an active role in the economic development of its territory through enhancement of a general image linked to the geological heritage and the development of Geotourism. A European Geopark has direct impact on the territory by influencing its inhabitants' living conditions and environment. The objective is to enable the inhabitants to reappropriate the values of the territory's heritage and actively participate in the territory's cultural revitalization as a whole.

- 4 A European Geopark develops experiments and enhances methods for preserving the geological heritage.
- 5 A European Geopark has also to support education on the environment, training and development of scientific research in the various disciplines of the Earth Sciences, enhancement of the natural environment and sustainable development policies.

- 6 A European Geopark must work within the European Geoparks Network to further the network's construction and cohesion. It must work with local enterprises to promote and support the creation of new by-products linked with the geological heritage in a spirit of

complementarity with the other European Geoparks Network members.

- 7 Obtaining the European Geopark label. All requests for labellisation must be accompanied by a dossier, prepared on the model of the Application dossier for nomination as a "European Geopark". This application dossier must be completed and submitted by the structure in charge of managing the territory where the Geopark is to be located. This application dossier must be sent directly to the Coordination Unit:

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 reseau des Geoparks
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- 8 The European Geoparks Network Coordination Unit has formed an Expert Committee made up of specialists in sustainable development and the enhancement of the geological heritage from the zones having initiated this programme and representatives of international structures working in the area of enhancement of the geological heritage. This Expert Committee gives advice for all decisions regarding the nomination and integration of new zones within the network.



Welcome to the European Geoparks

