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Memory of the heritage

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Chief Editor
Catherine Roth
Director of Culture and Cultural and Natural Heritage

Director of Publication
Maguelonne Déjeant-Pons
Head of Division
Regional Planning and Landscape Division

Concept and editing
Christian Meyer
E-mail: christian.meyer@coe.int

Layout
Emmanuel Georges

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© Cover by O. Braasch: Ancient fields near San Marco in Lámis, Gargano Peninsula in Italy: the ancient inhabitants of this limestone plateau built dry stone walls to mark out their tiny plots and to terrace the sloping sides of the depressions. The aerial view takes in the entire primeval cultural landscape, protected today thanks to its national park classification.

Vignette 1: traditional Icelandic peat house by G. Lopez/Bios

Vignette 2: great bustard (Otis tarda) *by S. Cordier*

Vignette 3: Dipteronotus preserved in clay of the beginning of the secondary era by J-C. Gall

Below: Dapalis sp. fish from the Oligocene era by D. Heuclin/Bios

A heritage to discover

Council of Europe

Imagine that you have lost your memory. You have absolutely no recollection of your childhood, you do not recognise those around you, your own house, your personal effects. You have no idea how you came to be the person looking at you in the mirror. Everything seems strange and frightening. You have lost your identity…

Loss of memory among whole peoples is just as cruel and dangerous as loss of memory in individuals. However, there is something priceless which testifies to our past and helps us build our future. We are referring to our heritage. Heritage is a great opportunity, but also a great responsibility. We have to protect it, share it and pass it on. But first of all we have to identify and acknowledge it!

Since the 1970s, the Council of Europe has sought to enhance Europe's cultural and natural heritage and has devised a number of political and legal mechanisms to ensure that this heritage is preserved. To begin with, there are various international conventions focusing on the protection of specific aspects of heritage, such as the architectural heritage (Granada Convention for the Protection of the Architectural Heritage of Europe), the archaeological heritage (Valletta Convention on the Protection of the Archaeological Heritage), the natural heritage (Bern Convention on the Conservation of European Wildlife and Natural Habitats) and the landscape heritage (European Landscape Convention – Florence Convention).

This legal framework is supplemented by political co-operation, technical assistance and awareness-raising activities (such as the European Heritage Days).

The concept of heritage is today acquiring a wholly new significance. Globalisation and the emergence of a networked society, based on the new communication technologies, are turning Europe from an industrial economy into a post-industrial information society in which development stems more from enhancing the value of the tangible and intangible heritage than from traditional raw materials and energy sources. Heritage, in the broadest sense of the term, is also becoming a major source of wealth creation.

As a factor of durability, identity and human dignity, heritage is central to the logic of sustainable development and holds the key to a model of society based on the fair and rational use of local cultural, natural and landscape resources, recognition of diversity and a stronger sense of community. This is why it is necessary, as a matter of urgency, to look at and redefine heritage in terms not just of conservation but also of its functions and meanings in the current process of social change. Heritage is a vital part of the debate on diversity.

This change in the concept of heritage also presupposes a change in the political and legal approaches to the heritage activities undertaken. In order to meet the new challenges in our society, the Council of Europe has decided to draw up a new legal instrument on the integration of heritage into development, the shared responsibility of Europeans towards their "common heritage", and the contribution made by heritage in its various forms to better mutual comprehension.

Geology, palaeontology, archaeology, anthropology, sociology, architecture and art history are the areas on which we must focus in order to gain a better understanding of the memory of our heritage and fully appreciate its value and wealth.

This edition of Naturopa *will attempt to draw your attention to little-known or overlooked aspects of our heritage. We hope that in the following pages you will discover the important role played by these aspects. After all, when you have lost your memory, the sight of your own home may perhaps not be enough to bring things back to you. Often it is intangible things (sounds, tastes, smells) or forgotten items tucked away in a drawer (a letter, an old watch) which give us the clues as to who and what we are and what we wish to be.*

Maud de Boer-Buquicchio
Deputy Secretary General of the Council of Europe

Heritage: a concept in flux

D. Halleux/Bios

A roof being thatched in Brittany (France)

We are witnessing an ongoing evolution of the heritage concept. Originally cultural, this concept is acquiring highly diversified connotations nowadays so as to take in fresh fields and new categories as well as bringing us a new perception of heritage assets and a new way to maximise and make them part of day-to-day living.

It is a concept linked with that of memory, expressing and solidifying its collective frame of reference which is shared by us all and fundamental to our identities and our place in history. Furthermore, it is becoming a federative idea drawing individuals together at a time characterised by social change. Globalisation of economic relations, social mobility and the unprecedented revolution created by development of new information technology are the vehicles of uniform behavioural patterns with which the heritage concept interacts and generates a stronger sense of common origins and shared identities.

Appropriation of heritage by the public

The context described above is conducive to a new phenomenon of emotional ownership of heritage by members of the public, regardless of ethnic, cultural or religious background: that is to say, by ordinary citizens who take possession of these assets, above and beyond the ties of physical space or family which used to determine the individual's links with the heritage. This phenomenon of appropriation confers legitimacy on the principle of universal protection of every heritage, the idea of the world heritage supported by Unesco, or that of a common heritage upheld by the Council of Europe.

Heritage and awareness of its memorial content thus have highly diversified manifestations, first on an abstract plane through values in a spiritual, ethical and intellectual register, and by way of the knowledge and the life skills that have marked the generations of mankind since time began.

Their next manifestation occurs in relation to physical objects, reaching much further than their purely cultural conception to embrace a vast wealth starting with palaeontological relics, fauna and flora, including the new conception of landscapes introduced by the Florence Convention (a part of the territory as perceived by the inhabitants, which owes its character to the action of natural and/or human factors and to their interlinkage), and ending with cultural and anthropological features.

This is also a context vindicating the importance attached to perception of these assets by individuals. Heritage thus becomes a comprehension of territory actuated by a single mental process uniting all the natural, landscape, cultural and creedal resources which form each generation's environment.

A common venture

Protecting, preserving and making sustainable use of these resources is a venture entered upon in common, applying a transversal, multidisciplinary approach that meets the same criteria and the same demands as the preservation or maximisation of any one heritage category.

These combined assets create a new social dimension because of their contribution to the citizens' well-being and quality of life. Their potential to stimulate interpersonal cohesion and dialogue is becoming a political concern.

Their presence is growing steadily larger in the treaty instruments of the Council of Europe, whether they concern nature, culture or architectural, archaeological or landscape heritage. The importance of an integrated approach to these assets in their entirety is unmistakably asserted in the fundamental documents regarding the Pan-European Biological and Landscape Diversity Strategy for the sustainable development of the European continent, and the policy texts such as the final declarations of the Summit of Heads of State and Government of the Council of Europe. The new treaty instrument in preparation on the role of heritage in present-day society merely confirms this approach.

The current issue of *Naturopa* sets out this integrated approach to the various categories of a heritage that expresses a unified, collective memory spanning the full spectrum of our past.

José-Maria Ballester
Former Director of Culture and Cultural and Natural Heritage Council of Europe

The work of the Council of Europe in the field of geology

In 1999, the Icelandic government requested the Bern Convention Secretariat to investigate the feasibility of addressing geological conservation under the convention. More specifically the suggestion was to incorporate the concept of sites of geological interest (SGIs) into the Emerald Network of areas of special conservation interest (ASCIs).

The main reasoning behind this request was that while geological diversity represents the "Earth memory" in terms of physical processes and provides the substrate and basis for terrestrial biological diversity, the preservation of this part of the European natural heritage at a systematic regional level has been largely neglected. The underlying presumption is that when it comes to selection of ASCIs, geological conservation interests should be on an equal footing with habitat and species conservation interests.

Such an approach would, of course, demand quite significant research and mapping effort in order to describe and classify geological diversity and geomorphologic processes at a national as well as regional European level. However, many European countries now have in place national programmes, aimed at the recognition, documentation and conservation of their geological diversity.

As a follow-up to the initial request to the Secretariat, Iceland, under the aegis of the Group of Experts for the Emerald Network, led the development of a report and draft recommendation to the Bern Convention Standing Committee on the issue of co-ordinating, within the framework of the Emerald Network, the selection and protection of SGIs. The report provides initial selection criteria for such sites and notes, *inter alia*, that "Earth heritage conservation at a European level should select and protect representative sites which, when taken as a complete set, will adequately represent the geological history and landform development of Europe".

The importance of protecting geological heritage

The draft recommendation was discussed at the Bern Convention Standing Committee meeting in Strasbourg in 2001. Although all the countries recognised the importance of protecting geological heritage at a national and global level, there was not a majority view on the need to address this issue at a regional level under the Bern Convention. Major concerns raised were, *inter alia*, the possible lack of legal basis under the convention to recommend actions or co-ordinate work related to geological issues, as well as possible loss of compatibility with the European Union's Natura 2000 programme (Natura 2000 does not incorporate geological sites). However, in the light of the interest shown, it was suggested that legal frameworks for international co-operation for geological diversity conservation, other than the Bern Convention, should be examined. The European Landscape Convention was mentioned as a potential partner in this regard. The head of the Natural Heritage Division of the Council of Europe offered to investigate such frameworks and to examine, in co-operation with interested governments, the feasibility of drawing up a European charter of sites of geological interest.

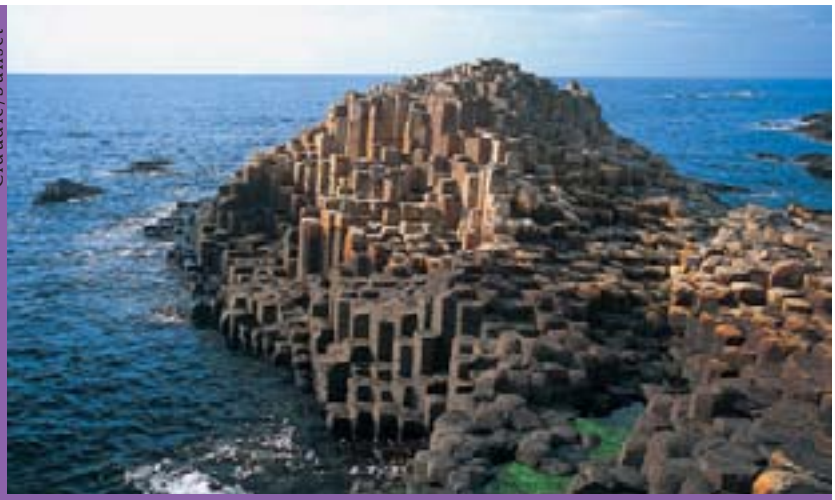
These efforts led to the establishment of a Working Group on the Geological Heritage, under the Committee for the Activities of the Council of Europe in the field of Biological and Landscape Diversity (CO-DBP). The working group met for the first time in Strasbourg in 2002 and discussed several ways to advance geological conservation at a European level, including the need to establish a new legally binding treaty. A consensus was reached, however, to develop a draft recommendation, in co-operation with Unesco and relevant NGOs and scientific bodies, on the conservation of the geological heritage and areas of special geological interest, for possible adoption by the Committee of Ministers of the Council of Europe.

The draft recommendation has three elements:

- the identification of areas of special geological interest that may contribute to the enhancement and protection of national and European geological heritage;
- the development of national guidelines for managing areas of geological interest, including the development of inventories, site classification, database development and site condition monitoring;
- the strengthening of existing laws, or development of new laws, to protect areas of special geological interest and moveable items of geological heritage.

The draft recommendation was further refined by the Working Group on the Geological Heritage at its meeting on 15 September 2003 and forwarded to the CO-DBP. Hopefully, this exercise will lead to a firm and formal basis within the Council of Europe for the conservation of the geological heritage.

Jón Gunnar Ottósson
Director General
Icelandic Institute of Natural History
Hlemmur 3
ISL-125 Reykjavic
jgo@ni.is



Claudie/Sunset

Giant's causeway, polygonal columns of basalt, in Northern Ireland

The strategy of the Unesco World Heritage Convention and the conservation of the geological heritage

A global strategy for a balanced and representative World Heritage List was adopted by the Unesco World Heritage Committee in 1994. Its aim is to ensure that the list reflects the world's cultural and natural diversity of outstanding universal value. This includes studies on geological and fossil sites and expert meetings held in co-operation with professional organisations such as the International Union of Geological Sciences (IUGS).

The memory of the Earth, its geological heritage, is part of our world heritage, as it enlightens us on the evolution of our planet. The interpretation of palaeontological and fossil sites helps us go back to the beginning of humankind. In-depth knowledge of geological and biological evolution, and an understanding of the development of the terrestrial and aquatic ecosystems are necessary in order to fully respect the environment of our planet. The entire international community is concerned about the protection of the most important geological and palaeontological sites. These range from the Australian Fossil Mammal Sites (Riversleigh/Naracoorte) to the Messel Pit Fossil Site, Germany, from the Dorset and East Devon Coast in the UK to the Grand Canyon National Park in the United States.

An under-represented heritage

Currently the geological heritage is under-represented on the World Heritage List. In the European region, a close co-operation began with the Council of Europe to ensure identification of potential sites as well as to provide recommendations for the protection and conservation of this unique heritage.

The significance and value of identifying, protecting, conserving, presenting and transmitting to future generations a record of life on earth, which is best represented by geological and fossil sites, cannot be underestimated. Such sites are more than isolated examples of our past. They enable us to understand life on earth today and can also be used to help us shape the future. This perspective through time is important as it enables important links to be made between such sites from the past to present day "natural" sites as well as cultural sites, which also represent our past.

At a world heritage fossil sites workshop (Sydney, Australia, 2000), the management of fossil sites was addressed, in particular: the need for ongoing research to maintain and enhance world heritage values, the interpretation and communication of the significance and value of these sites, the management of tourism and the protection of the world heritage values of the sites in the interests of all diverse stakeholders and parties. Most of these topics are inter-related and integrated management planning needs to recognise this.

Many issues related to the protection of the geological and fossil sites need to be considered by the organisations responsible to ensure protection through an integrated management plan. Thorough planning is also an essential part of the world heritage nomination process and its follow-up. Finally, communication and networking among all stakeholders is crucial in the European context to enhance geological and fossil heritage conservation for future generations.

Mechtild Rössler
Unesco World Heritage Centre
7, place de Fontenoy
75352 Paris 07 SP
m.rossler@unesco.org

Extract of the natural World Heritage List criteria (Operational Guidelines, 2002)

"44. ... Sites nominated should therefore:
a. i. be outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features; ..."

Hohe Tauern National Park, a geosite in Austria

L. Lammerhuber/ NP Hohe Tauern

Foldings in the rock

The most prominent and outstanding features of nature on our planet are its mountains. Ever since the beginning, mountains have been seen as mystical, secret bearing, awe inspiring and dangerous.
The Hohe Tauern National Park (180 000 hectares or 1 800 square kilometres) in its entirety is the largest single supra-regional protected area of natural and cultural resources in the Alps. Concerning its area, the largest part of the national park lies within the so-called "*Tauernfenster*", a geological "window" which gives us insight into the deepest tectonic layer of the Eastern Alps, the Penninic Unit, and which in its size and shape is unique.
The Hohe Tauern National Park is a landscape shaped by the Ice Ages, with traces of important geological and geomorphological processes and a diverse wealth of shapes and forms. It is an outstanding testimony to the formation of the Alps. The characteristic features of the *Tauernfenster*, the various types of rock and deposits as well as the wide climatic spectrum, from oceanic to continental, create the precondition for unique and impressive examples of current biological and ecological developments, as for example the primary landscape in the pro-glacial areas with their successions. Apart from these Ice Age landscape phenomena one can also observe all the recent glacial processes.
The *Tauernfenster* is a giant tectonic "window" giving us insight into the geological history of the Alps. To date, over 200 minerals have been found in the region of the Hohe Tauern and many of them are from spectacular and internationally significant sites.
The Hohe Tauern National Park guarantees the lasting protection of one of Austria's most valuable contributions to the world's irreplaceable natural and cultural heritage.

Harald Kremser
National Parks Department
Salzburg Federal State Government
Postfach 527
A-5010 Salzburg
harald.kremser@salzburg-gv.at

Abteilung Medien Jungfraubahnen

The Aletsch glacier on the Jungfrau

Jungfrau-Aletsch-Bietschhorn

In 2001, the Jungfrau-Aletsch-Bietschhorn region (JAB) was included in Unesco's list of World Heritage Sites, becoming the first natural site in the Alps to receive that distinction. This region, which includes the Great Aletsch Glacier, is the largest glacial area in the Alps, and has been the subject of research for some time. The site also contains evidence of the geological history of the Alps, such as the Aar crystalline massif, autochthonous and parautochthonous sedimentary layers and elements of the Helvetic nappes.
Geological and geomorphological diversity, altitudes ranging from 900 to 4274 metres and contrasting climatic conditions (from humid, cool oceanic conditions to hot, dry conditions in inland valleys) result in a huge variety of alpine flora and fauna.

Durdle Door

Durdle Door

The Dorset and East Devon Coast

The Dorset and East Devon Coast was awarded World Heritage Site status by Unesco in 2001. It is England's first natural World Heritage Site, and has become known as the "Jurassic Coast". The site includes 155 kilometres of unspoilt cliffs and beaches, but it is not the beauty of the coast that is the reason for its inscription on the World Heritage List. Its global value lies in the unique insight it provides into the earth sciences. The rocks record 185 million years of the Earth's history, laid out in a "walk through time" spanning the Triassic, Jurassic and Cretaceous periods. The coast has produced a vital record of internationally important fossil remains, and the varied geology also provides a spectacular laboratory of coastal change, and supports rare and important plants and animals. Finally, the site has played a vital, international role in the history of geology.

The achievement of World Heritage Site status follows almost eight years of preparatory work and is seen as very significant throughout Dorset and East Devon. A small and dedicated team of earth scientists, planners and managers is now developing the work programme for the site, with the fundamental vision of protecting and celebrating the site for current and future generations. The site is seen as bringing a new and important strand to the lives of local communities, by supporting programmes of interpretation, education, sustainable tourism and local regeneration. The area is an established tourism destination, with millions of visitors every year. The prospect of enabling so many people to understand the evidence of the Earth's history and natural processes creates an important opportunity to boost the profile of the earth sciences at the national and international levels. Full details of activities and interests within the site can be found at www.jurassiccoast.com, and from the Dorset and East Devon Coast World Heritage Team on 00 44 1305 225101.

Malcolm Turnbull
Manager, Coast and Countryside Policy
Dorset City Council, City Hall
GB -Dorchester DT1 1XJ
m.turnbull@dorset-cc.gov.uk

The International Union of Geological Sciences (IUGS)

The International Union of Geological Sciences (IUGS), which is one of the largest and most active non-governmental scientific organisations in the world, has 115 "adhering organisations" (member countries) and 38 affiliates (international geoscientific societies, unions and associations). IUGS was founded in 1961, in response to a need to co-ordinate geoscientific international research programmes on a continuing basis, and is a member of the International Council for Science (ICSU). Geoscientists felt that a mechanism was required for taking action on global geological problems in the periods between the International Geological Congresses, held every four years. IUGS also serves as a vital link in solving problems requiring input from other scientific bodies operating under the aegis of ICSU. Unesco is also an important partner of IUGS; together with Unesco's Division of Earth Sciences, IUGS launched the International Geological Correlation Programme (IGCP) more than thirty years ago (a new name, the International Geoscience Programme, will be adopted in 2003). This has developed into the most successful worldwide joint programme in the earth sciences, with some thirty-five to forty international projects running each year. The annual budget of US$300 000 is essentially only seed money; Unesco estimates that the total money invested in the IGCP annually is more than US$30 million.

Two important committees, the Committee on Research Directions and the Committee on Publications, give advice to the Executive Committee and the Council of IUGS on relevant questions. Eight commissions, five task groups and two initiatives cover the main parts of the geoscientific activities, such as stratigraphy (International Commission on Stratigraphy – ICS), the history of geosciences (International Commission on the History of Geological Sciences – INHIGEO), environmental topics (Commission on Geological Sciences for Environmental Planning – COGEOENVIRONMENT) or geoscience information (Commission for the Management and Application of Geoscience Information – CGI). One of most recent and most successful developments in the geosciences is reflected by Geomedicine, an initiative on geology and health.

To meet both the growing public interest in exceptional geological outcrops and the increasing necessity of informing the public about the earth sciences, IUGS founded a Task Group on Geosites. This is compiling a worldwide inventory of significant geological sites. Similarly, Unesco's Division of Earth Sciences has launched a Geoparks programme. Several experts on the IGCP Scientific Board, which is the evaluation board for all IGCP projects, composed of persons suggested by IUGS, act as Unesco advisers for the Geoparks programme. Recently, the Council of Europe started an initiative to pay more attention to the geological heritage of Europe. In order to be active in all these initiatives, IUGS is re-structuring its Task Group on Geosites during 2003. IUGS hopes that this will lead to worldwide consideration of the importance of our geological heritage and the contribution of the geosciences to a better understanding of the Earth, the possible key to the understanding of the future of our planet.

Werner R. Janoschek
Secretary General of IUGS
c/o Geological Survey of Austria
Rasumofskygasse 23
P.O.B 127
A-1031 Vienna
wjanoschek@cc.geolba.ac.at

Europe's palaeontological heritage

Heritage, according to current usage, relates to the cultural legacy formed by works of art, historic buildings and sites, literature and music. A record of civilisations, and the fruits of human endeavour, it is administered under legislation that varies little from one country to another. Recently, it has been extended to include the natural heritage represented by fauna, flora and outstanding landscapes. Measures for the conservation and management of the latter generally focus on protecting endangered animal and plant species and threatened natural sites. The aim is thus to perpetuate or perhaps improve the current situation. It must be acknowledged, however, that the planet's appearance is highly changeable and that both the living beings inhabiting it and their environments are the embodiment of one moment in its evolution. There has been a before, and there will be an after. In other words, the world around us becomes intelligible only through an awareness of history. This is true of humanity's descent from animals and, more generally, of the succession of living species over time. From this perspective, fossils and fossil sites are a record of life and of the history that created Europe's fauna and flora, a history that spans not mere centuries but millions of years.

Fossils: archives of the history of life

Once it dies, every living being is destined to disappear without trace. Human, animal and plant remains are prey to numerous attacks that contribute, sooner or later, to their destruction. Oxygen in the atmosphere decomposes organic matter. Water dissolves shells and skeletons. A host of animals and micro-organisms feed on dead organisms. Consequently, whenever animals and plant remains from bygone eras are preserved, this is the exception; it is something of a miracle, but it does happen. Fossils, which are the remains of dead beings or traces of their activities preserved in rocks, are thus a kind of archive telling the story of life and helping to make the extraordinary diversity of the present-day living world comprehensible.

Traces of ancient fauna and flora are transmitted through a variety of fossilisation processes. The most common fossils collected by informed walkers at the bottom of cliffs or in quarries correspond to mineralised animal parts such as shells and skeletons. Depending on the zoological classification of the species concerned, these consist of calcium carbonate, calcium phosphate or, more rarely, silica. Pyrites, an iron sulphide with attractive bronze colourings, may subsequently take the place of the original mineral substance.

Exceptional circumstances may result in soft tissues, skin, muscles or internal organs being preserved. Examples are the mammoths preserved intact in the Siberian ice fields and insects and spiders contained in amber, a fossil resin. Such records yield invaluable information about the structure of extinct species.

In some cases, shells and skeletons have been dissolved a long time after they were buried, leaving rock cavities that are faithful replicas of their morphology. Injecting plaster or some other synthetic resin into the cavities in vacuum, then dissolving the rock may find the outline of these virtual fossil ghosts.

Another of the more spectacular illustrations of the existence of dead beings is recorded in rocks in the form of burrows or tracks. These are traces left by various animal activities, such as movement, hunting for food and protection against predators. As a general rule, those who left them remain unknown, since, apart from the odd exception, they are not fossilised alongside their handiwork.

The message of fossils

The study of fossils is part of the field of palaeontology, a discipline at the interface between the life and earth sciences. It seeks to piece together the history of living beings, an evolutionary sequence which, over almost four billion years, led from the appearance of the first bacteria to the emergence of human beings. In fact, a very long line of descent connects us to the first forms of life. Fossils tell us the story of our origins.

An inventory of biodiversity

Firstly, fossils teach us about the extreme diversity of the living world that has inhabited the planet. Throughout the geological eras, a vast number of animals and plants followed one another; most of them are no longer represented in the present-day natural world. Dinosaurs, with their now familiar figures, are one example. Old forms disappear and new species emerge over millions of years, demonstrating life's incredible capacity for innovation.

The origin of present-day fauna and flora

The living beings that have succeeded each other with the passing of time

J-C Gall

Footprints of a secondary era reptile (Chirotherium) *and desiccation cracks captured on the surface of a sandstone bench. Width of footprint 12 cm.*

J-C Gall

Ammonites (Promicroceras), *molluscs of the secondary era whose shells have been transformed into pyrite (ammonite's diameter: 1 cm).*

have come about by means of gradual transformations. This is the basis of the theory of biological evolution, which, over the last two centuries, has sparked an unprecedented scientific revolution, radically changing our perception of life. From this perspective, nature as it is today, including fauna, flora and landscapes, represents a snapshot, a freeze frame, in its history. The structure of the animal and plant species that inhabit our environments can only be understood, therefore, as the provisional end of a long series of changes and adaptations. Without palaeontological data, life would remain a mystery to us forever. The past sheds light on the present.

Deciphering the mechanisms of biological evolution

The mechanisms involved in the emergence of new species are now better understood, thanks to spectacular advances in molecular biology. They are based on modifications in the genetic code. Yet it is over geological eras, which entail the succession of thousands of generations, that the reality of biological evolution is borne out. The lengths of time involved are beyond the experience of a human lifetime. As millions of years go by, fossil species undergo gradual structural modifications that can be explained only by lines of descent. Living beings follow one another in the same way as images in a film. Each image is determined by the previous one, and prepares the image that will follow it. Notwithstanding times of crisis characterised by the simultaneous extinction of large numbers of species, the film of life has never become torn. Never, at any time, has the projection stopped. Yet one day the words "The End" will appear.

The history of life has highlighted the crucial role played by changes in the planet's environment during the process of biological evolution. In order to survive, fauna and flora must be in equilibrium with the landscapes they inhabit and the climatic pressures to which they are subject. Yet the configuration of the globe's surface, the distribution of continents and oceans and climatic features have changed continually during the Earth's history. Mountain ranges have emerged, and then been eroded. Tropical climates have given way to arid conditions or ice ages. Living beings continually have to adjust. Life is forced to innovate.

This is true of human beings, who appeared on the scene of life barely a few million years ago. Descended from primate ancestors living in tropical forests, they ate leaves and fruit just like present-day big apes, and moved around in the trees. A climate change resulting in more arid conditions brought about the expansion of a more open landscape, the savannah. Human beings ventured into it. In order to survive there, they had to adapt their

Fake fossils

Articles on the art market regularly report the emergence of fakes that fool the experts. Fossils are not immune from such unfortunate incidents. Back in the 18th century, Johann Beringer, a professor in Würzburg, fell for a hoax perpetrated by his students. They had carved strange patterns into stones, which he then collected and published in a book, describing them as fossils. When he eventually discovered the deception, he was ashamed and appalled, and did his utmost to withdraw the book from the market.

Piltdown Man was unearthed in Sussex (England) in the early 20th century. He had a human-like skull and an ape-like mandible, and was considered by some to be a "missing link" in the history of the hominids. Much later, around 1950, he was discovered to be a fake. A prankster had combined and disguised two skeleton components belonging to a man and an ape respectively, to give the impression that they came from one and the same prehistoric individual.

Unscrupulous sellers who are past masters in forgery often exploit the gullibility of tourists who travel to far-off countries and have an interest in beautiful fossils. They offer whole fossils "reconstructed" from components taken from a number of specimens, and even from different species, or fill in the missing bits with coloured cement. Some examples are utterly fanciful, having been "invented", carved or moulded into cement that looks like natural rock. It is important to remain vigilant.

behaviour to the conditions of their new habitat. Straightening up their bodies to stand on two feet, the shift from a vegetarian diet to the life of a predator and the invention of tools were all responses to the demands of a new environment.
Without the evidence provided by fossils, the origins of humanity would remain forever unknown.

A planet in crisis

For two million years, Earth has faced one of the biggest crises in its history. It began with climate change, responsible for the Ice Ages. At the same time, there was a dramatic reduction in biodiversity and the proliferation of a formidable predator, the human being. The last Ice Age ended 10 000 years ago. The warmer climate we are now experiencing gives cause for concern in view of its impact on the seasons and the overall rise in sea level following a gradual melting of the great icecaps.
This situation raises a number of issues:
– how long will the current period of warming last?
– what impact will it have on the distribution of climate zones?
– will it have an irrevocable impact on biodiversity?
– how quickly will equilibrium adjustments take place in disturbed environments?

An understanding of the planet's history, particularly the numerous crises that have affected the surface of the globe, will help to provide answers to some of these questions. Fossils, which are evidence of these upheavals, continue to convey a vital message.

Fossil deposits: evidence from the past

Fossils picked up by chance during a walk bring pleasure to collectors. They may be seen as ornaments or as invitations to dream of vanished landscapes. More systematic consideration is given to fossil deposits. They represent accumulations of exceptionally abundant or well-preserved palaeontological records. Some of them have been known and prospected for a long time, such as the Monte Bolca site near Verona, whose fish fossils intrigued visitors to curiosity shops and museums back in the 16th and 17th centuries.
Scientists began to take an interest in fossil deposits at a very early stage. Like archaeological sites, fossil deposits yielded the remains of living beings, both animals and plants, having lived together at a given moment in Earth's history. They offer a photograph of a single instant in the progression of geological eras, allowing the faithful reconstruction of a vanished landscape or environment. As a result, fossils have been systematically recovered by means of excavation sites. The excavation sites set up by prehistorians are models of meticulous management and enhancement of a palaeontological heritage. Full-scale civil engineering machinery is needed to recover fossils from older deposits, where they are contained in hard rocks, limestone or sandstone. The lithographic limestone deposits of Cerin, in the southern French Jura, which are famous for their fossils dating back to the end of the Jurassic period (around 140 million years ago) were the location for an excavation site that continued to operate for twenty years.

As palaeontological publications made the public aware of the spectacular nature of such discoveries, however, people began to covet fossils. Fossil deposits were pillaged, plundered and sometimes completely destroyed in order to recover the best-preserved specimens, destined for an increasingly lucrative trade.

Fossils: a heritage worthy of protection

Fossils are a non-renewable heritage. As well as depriving scientists of invaluable specimens, the pillaging of fossil deposits irrevocably destroys examples considered less attractive and therefore unmarketable, thereby reducing the wealth of information that might be yielded by a detailed study of the site. An isolated specimen taken out of its geological context, that is, without reference to how it was deposited or the fossils with which it is associated, loses the main thrust of the message it conveys about the history of life.
In recent decades, a growing fascination with fossils and minerals has led to an increase in the number of fossil and mineral "markets" and, more dra-

European Palaeontological Association (EPA)

The European Palaeontological Association, which was founded in 1991 and operates from the premises of the Council of Europe, brings together nearly 400 palaeontologists from all over Europe. It has three aims: fostering co-operation among European palaeontologists in the field of research and teaching, organising scientific meetings and enhancing and safeguarding Europe's palaeontological heritage. In 1995 it obtained consultative status with the Council of Europe as an international non-governmental organisation (NGO). Its members communicate via a six-monthly journal, *Europal*.
Every year, the EPA holds a workshop or congress on a palaeontology-related topic in a European country. These scientific events also afford an opportunity to hold lectures of general interest to a wider public.

In order to educate the public about Europe's rich palaeontological heritage and to arouse people's curiosity about the history of life and of the Earth, in 1999 the EPA published a book aimed at the general public about the main fossil deposits in Europe. Focusing on twenty renowned palaeontological sites, it traces the history of Europe from the first fauna, which appeared more than 600 million years ago, to those of the Quaternary era, which were contemporary with prehistoric human beings. The publication is available in Italian and German; French and English versions are planned.

EPA
Laboratoire de Paléontologie de
l'Université Louis Pasteur
1, rue Blessig
F - 67084 Strasbourg cedex

M. Rauch/Bios

Fossil of ammonite in a field of the Vosges du Nord (France)

matically, "unlicensed" sales. Nearly 500 fossil dealers have been identified in France alone. Prices are soaring, and considerable profits are being made. For instance, a fossilised gazelle skeleton from Luberon (Alpes de Hautes-Provence) sold recently for 45 000 euros. A dinosaur egg went for 520 euros at an auction in 2002. Internet sites offer potential buyers illustrated catalogues of fossils, together with price lists. Trade in both fossils and minerals encourages intensive prospecting of deposits, which will sooner or later be exhausted. It has also resulted in an increase in theft from museums and public collections. Such practices are expanding all the more rapidly because many European scientific institutions find it increasingly difficult to protect the palaeontological and mineralogical heritage housed within their premises.

Faced with pillaging and illicit trafficking, many European countries have introduced specific measures to stem the dissipation of their palaeontological heritage. The fossil-bearing oil shales in the Swabian Jura (Baden-Württemberg) are a good example. For several centuries, the shale quarries in the Holzmaden area have yielded well-preserved fossils representing the inhabitants of a former sea that covered the region towards the middle of the secondary era (around 180 million years ago). The fauna included large reptiles (some more than fifteen metres long), fish, sea lilies and a vast number of molluscs. It has enhanced museum collections all over the world.

In 1935, an Act on nature conservation classified the fossil deposits as "protected palaeontological sites". This status was confirmed by the 1972 Act, which extended the concept of cultural heritage to "works by human beings and works of nature". The legislation provided that palaeontologists at the Stuttgart Museum of Natural History would be responsible for deciding whether a given fossil discovered in the deposits was worthy of conservation as a heritage item. The Act required both individuals and companies discovering unusual fossils to notify museum officials immediately. Only the Baden-Württemberg *Land* authorities, in consultation with the Stuttgart museum, can authorise field excavations. Substantial bonuses paid by the Stuttgart Museum of Natural History are an incentive for quarry operators to look after any finds.

Most European countries now have a palaeontological or geological society. Faced with threats such as pillaging of deposits and illicit trade in fossils and minerals, they have approached regional and national authorities, with varying degrees of success, with a view to stemming the dissipation of this heritage. Some of them have drawn up codes of ethics for their members. The French Palaeontological Association, for instance, requires its members "not to engage directly or indirectly in trade or commercial consultancy involving objects that are similar or related to those they study" and to refrain from building up personal collections. Indeed, private collections are partly responsible for exhausting deposits.

In 1993, the European Palaeontological Association, which brings together palaeontologists from all over Europe, made a list of measures taken by a number of European countries to protect their fossil deposits. It revealed considerable disparities. Palaeontological sites may be protected by a special legal status, incorporated into parks or nature reserves or preserved following private initiatives. Because of the wide range of situations, there is a pressing need to draw up an inventory of European sites requiring protection and classification and to develop a coherent legislative instrument at the European level. It is hoped that these measures can be taken under the aegis of the Council of Europe.

Conclusion

The palaeontological heritage represented by fossils and fossil deposits takes over from the cultural heritage to tell the story of Europe and our story. It consequently deserves the same treatment and respect given to the legacy passed down through the historical ages by human endeavour. As rare objects and non-renewable archives, fossils are coveted by traders, resulting in unbridled pillaging of fossil deposits. Conservation measures are urgently needed. In order to be

effective, they must be harmonised at European level. No matter how perfect such legislation is, however, it will be useless unless it is backed up by education. People have more respect for what they understand. The palaeontological heritage would benefit from being incorporated more fully into primary, secondary and university curricula. It conveys a past that brings an additional dimension to the living world to which we belong, that of evolution. A static view of the world is replaced by an awareness of history. Everything is connected in a wonderful continuity: the biological evolution leading from the first bacteria to human beings, the hominid adventure, the succession of civilisations. It is a great fresco illuminated by the poetry of the geological eras.

Jean-Claude GALL
Laboratoire de Paléontologie de l'Université Louis Pasteur
Representative to the Council of Europe of the NGO "European Palaeontological Association"
1, rue Blessig
F - 67084 Strasbourg cedex

Excavation sites as a scientific way of enhancing the palaeontological heritage: the example of the Cerin site

In the 19th century, the Bugey region in the southern French Jura experienced a certain amount of industrial activity connected with the working of lithographic limestone quarries; this stone, which has a particularly fine grain, is used in the reprographic process of lithography. During the works, palaeontologists became aware of the chance discovery of extremely well preserved plant and animal fossils. However, their exact location in the strata forming the quarry faces had not been specified. The reconstruction of the landscapes they inhabited towards the middle of the secondary era (the Jurassic period), 140 million years ago, remained speculative.

Palaeontologists at the University Claude Bernard in Lyon started a project to set up an excavation site in an abandoned quarry in the village of Cerin-Marchamp. The aim was to identify, over an area of nearly 200 square metres, the 400 strata of the former quarry face, which was fifteen metres high, and to list the fossils and features found in each level of the rock.

The work began in 1974, and lasted twenty years. Civil engineering machinery had to be installed, including an electric crane, a bulldozer and pneumatic drills. Some strata were more than thirty centimetres thick. The excavations took place in the summer, for six weeks each year; about twenty volunteers – students, researchers and lecturers from various universities in France and other European countries – took part.

When a stratum was identified, the observations were noted on a form in order to keep a detailed record. This form listed the nature, quantity, location, orientation and state of preservation of both the fossils and patterns and structures in the rock (ridges formed by the current, drying fissures, etc.). This kind of inventory makes it possible to trace, stratum by stratum, the sequence of biological links over time and the associated changes in the landscape. An analysis of the data collected during twenty years of work led to the reconstruction of a tropical lagoon that had developed at the base of a partially salient barrier reef, which was periodically in contact with the open sea. Algae, jellyfish, molluscs, crustaceans, sea urchins, starfish and a wide variety of fish inhabited it. The emergent land nearby was home to vegetation made up of ferns, conifers and palm plants known as Zamites. Terrestrial reptiles, tortoises, crocodiles and flying reptiles also lived there. Looking for food, the latter ventured into the lagoon during a period in which the water was retreating, leaving their footprints in the chalky mud. These footprints have reached us, fossilised on the surface of layers of lithographic limestone.


J-C Gall

Excavation sites of Cerin (South Jura) in 1987

S. Cordier/centre de reproduction de Hunawihr

Otter and litter born in captivity

European nature, our common heritage

The Bern Convention (Convention on the Conservation of European Wildlife and Natural Habitats, Bern, 1979) was a pioneer text.

Not only did it use the concept, coined previously, that wild flora and fauna are a shared responsibility of nations, it also enlarged the responsibility towards endemic species and their habitats, favouring the idea that valuable natural assets existing in one country alone can be dealt with in the framework of international laws. This idea leads to the concept of a "common heritage" associated to nature.

Thus, through this convention, contracting states recognise that wild fauna and flora constitute a valuable natural heritage that needs to be preserved and handed on to future generations, and they commit themselves to their protection and improvement. Governments promise to manage nature in a sustainable way, ensuring that the economic development of societies does not harm the natural environment. The Bern Convention contains a number of detailed provisions drawing up a common list of protected species in Europe and establishing very precise obligations as to how species and habitats need to be preserved and taken into account in sectoral policies.

All the provisions of the convention taken together form a very precise strategy on how to maintain Europe's wild biological diversity in a favourable state. Its objectives coincide with those of the United Nations "Millennium Declaration", which recognises "respect for nature" among the seven fundamental values considered essential to international relations in the 21st century:

"Respect for nature. Prudence must be shown in the management of all living species and natural resources, in accordance with the precepts of sustainable development. Only in this way can the immeasurable riches provided to us by nature be preserved and passed on to our descendants. The current unsustainable patterns of production and consumption must be changed in the interest of our future welfare and that of our descendants".

A rich heritage

Even if, when compared to other continents, Europe may seem relatively poor in terms of biological diversity, this is only a superficial view. Natural forests, more or less modified by human activities, cover vast areas of our continent, particularly the great mountain ranges and the north and east of Europe. These areas constitute the natural habitat of species as interesting as the wolf, bear or lynx, to mention three large carnivores with a very high public profile. The Mediterranean region, Anatolia, Iberia, the Caucasus and the European islands of the Atlantic and the Mediterranean are among the areas of highest biological diversity in the world, containing many unique species and ecosystems.

Most of these endemic species are plants and invertebrates, but there are also endemic fish, reptiles and other vertebrates. The Iberian lynx, for instance, is a wonderful species, limited at present to the south of the Iberian Peninsula, and it is the object of particular attention by the Bern Convention.

A flexible instrument of international co-operation

The convention is not only a legal text, but also a useful framework for co-operation between nations, through which they try to harmonise policies, fix positions and plan common conservation action on issues and problems which only a co-ordinated response can solve. Take for instance the threats posed to Europe's ecosystems and species by biological invasions, many caused by invasive alien species. These species can harm the economic as well as the ecological balance. Invasive species can easily spread from one country to another, so only a common strategy can succeed in controlling the problem. In this context the convention is preparing a European Strategy on Invasive Alien Species, determining precise action to be developed by states in order to prevent unwanted introductions.

The convention also has a conflict-solving mechanism aimed at helping to find solutions to specific problems that may arise in its application by states. Often NGOs present cases where development projects clash with conservation of species or habitats protected under the convention. In such cases, the body overseeing its implementation – the Standing Committee – discusses the case and makes recommendations proposing solutions. Experts may be sent on fact-finding and negotiation visits. The convention is applied in a flexible manner, as its aim is to balance nature conservation interests against other legitimate concerns, but always promoting the ideas that our common natural heritage is of public interest, priority is to be given to individual interest and nature conservation policies need to be taken into account in other policies.

The convention has also established synergy with other international conventions having similar objectives, such as the UN Convention on Biological Diversity, the Ramsar Convention on Wetlands of International Importance especially as Wildfowl Habitat, and the Bonn Convention on the Conservation of Migratory Species of Wild Animals.

The convention will never achieve successful results if the public does not manifest its interest in nature. Public awareness of the importance and relevance of biological diversity is the best guarantee for its preservation. Participatory democracy is the best recipe for nature conservation.

Eladio Fernández-Galiano
Head of the Natural Heritage and Biodiversity Division
Directorate General IV
Council of Europe
F-67075 Strasbourg cedex
eladio.fernandez-galiano@coe.int

Europe's role in conserving global wildlife: CITES

A major tool for the conservation of the world's wild animals and plants is the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Concluded thirty years ago, it now has 162 contracting parties and protects some 600 animal and 300 plant species from commercial international trade and regulates such trade in no less than 4 000 animal and 22 000 plant species.

Europe is one of the largest markets for wild animals and plants and their products, along with Japan, the United States and China. The demand for these "commodities" exerts an enormous pressure on developing wildlife producer countries and where they are difficult or impossible to obtain legally, illegal trade is a major risk. This is the essence of the *raison d'être* of CITES: countries of origin of wildlife species need the co-operation of consumer countries to ensure that exports, if any, take place on a sustainable basis and in compliance with their conservation legislation.

There are forty-two European parties to CITES and it therefore plays an important political role in the development of the convention.

A positive attitude

Since 1975, when CITES entered into force, it can be seen that the European attitude to the conservation of "exotic" species has changed dramatically and it is probably true to say that it has evolved from being a major threat to a wide variety of species – such as crocodiles, sea turtles and other reptiles, parrots, elephants and spotted cats, cacti and orchids – to an important positive factor for the conservation of these species. Where European countries entered reservations excluding them from trade restrictions under CITES, they now form the avant-garde of the international conservation community. European Community legislation on the implementation of CITES is a good illustration thereof, with a multitude of restrictive measures going beyond those afforded to species under CITES. Where these stricter measures are based on scientific data, are taken after consultation with affected countries, are in principle of a temporary nature and where import restrictions are accompanied by measures to enable the affected developing producer country or countries to resume trade on a sustainable (non-detrimental in CITES language) basis, they are probably a positive thing. The risk of ineffectiveness is high though and stopping imports from one producer state may lead to a higher pressure on the populations of other producer states and therefore simply shift the conservation problem from one country to another. Where there is an important consumer demand for a particular species, the likelihood is great that trade will simply shift to similar species with maybe more important negative conservation effects. Finally, where consumption is eliminated through import restrictions in only some of the consumer countries, the problem arises that the remaining countries will simply absorb this at lower prices as a result of the reduced competitive demand. I am therefore convinced that international measures, supported by strict implementation in both producer and consumer countries, are in the majority of cases the proper answer to conservation problems caused by international trade. CITES provides that tool. On the other hand, in spite of the above possible negative aspects of national import restrictions, it is clear that such measures have often paved the way for appropriate remedial action being taken, either at the international level or by the affected producer country or countries.

Useful know-how

Apart from the purely commercial markets for wildlife products, Europe has historically experienced an important demand for exotic animals and plants from professional zoos and private hobbyists. Fortunately these circles have also come to realise that collecting rare species is not as harmless as collecting rare stamps and their potential for positive conservation action is quite important. Zoos and botanical gardens have become more and more involved in real conservation education and *in situ* conservation efforts in addition to playing a role in maintaining gene pools for the possible reintroduction of endangered species. Hobby breeders – and particularly those who are well organised and participate in umbrella organisations such as the German Bundesverband für Naturgerechten Artenschutz – possess a wealth of information and expertise that can be better exploited in the context of *ex situ* conservation efforts such as reducing the pressure on wild populations of parrots, for example, through the provision of more valuable hand-reared animals.

I hope to have briefly demonstrated Europe's important role in and responsibilities for conserving global wildlife using the CITES angle. I of course realise that Europe is equally active in other biodiversity-related multilateral environmental agreements (MEAs), such as the Convention on Biological Diversity and the Convention on the Conservation of Migratory Species of Wild Animals on a global level, as well as the many conservation instruments created in the context of the Council of Europe. I therefore believe that Europe can play a more important role in ensuring that all agreements and conventions with a role in the conservation of the world's biodiversity have compatible priorities, pursue similar targets and thus allow much better co-ordination, synergies and interlinkages.

Willem Wijnstekers
Secretary-General
Convention on International Trade in Endangered Species of Wild Fauna and Flora
International Environment House
15, chemin des Anémones
CH-1219 Geneva

Today/Rex features/Sipa

Wild pet trade

Threatened and endangered birds in Europe

A virus is pushing vultures to the verge of extinction in India. A common agricultural policy devastates large tracts of suitable habitats for birds in Europe. Illicit trade in birds from Asia and South America supplies exotic rare birds for private aviaries. Illegal hunting in the Mediterranean countries takes a huge toll of migratory birds annually. Disastrous oil spills kill many thousands of birds in EU waters. These are facts... Birds everywhere are threatened, and more often than not the culprit is the one facing you in the mirror. It is man who is their greatest threat. In the last 200 years, 100 bird species have disappeared from the face of the world. And according to recent studies on the threatened birds of the world by BirdLife International it is estimated that in the next 100 years about 12 % of all bird species are at risk of becoming extinct. That adds up to 1 186 bird species globally threatened. It is indeed shocking.

The start of the decline

In 1974 the Council of Europe published a study "Threatened birds" by the International Council for Bird Preservation (ICBP, now known as BirdLife International) covering various European bird species facing certain extinction. The survey enumerated fifty-eight species which had either undergone unprecedented decline or which, because of their extremely low populations, could be threatened by any modification of their existing habitat. It stressed that necessary steps had to be immediately taken to ensure their continued existence on the European continent.

Seven years later the Council of Europe published a second survey "Birds in need of special protection in Europe" prepared by the RSPB (UK) (Royal Society for the Protection of Birds) in co-operation with ICBP. While it acknowledged the fact that a number of species, such as the peregrine falcon (*Falco peregrinus*) to mention one example, had shown an improvement in status since 1974, it was found necessary to add fourteen other species, including the black stork (*Ciconia nigra*), to the list of birds needing special protection.

Since then Europe has lost the bald ibis (*Geronticus eremita*). About 300 years ago it was still breeding in central Europe, particularly in the Alpine regions of Austria, Germany and Switzerland. The demise of the last colony in Europe, at Birecik, in Turkey, occurred fourteen years ago. It is now restricted to a few colonies in Morocco and Syria.

Although Europe's birds form a relatively small share of the world's avifauna, some 514 species of birds occur regularly in this continent. Analyses in recent years reveal that 38 % of European birds are considered to have an unfavourable conservation status. Farmland habitats hold the largest number of these species (60 %), followed by wetlands and forest – two other important habitats for birds. A number of species which need special protection are also found in marine, heathland, moorland, tundra and mountain habitats. It has been realised that for the majority of these birds there has been a substantial decline in their European populations. These declines have been mainly linked with agriculture intensification. Almost half the land area of Europe is farmed, and much of it intensively. Modern farming methods destroy breeding habitats, limiting nesting opportunities, removing cover, and reducing food availability. But other important factors related to changes in land use and land management include, amongst others, loss and degradation of wetlands, afforestation as well as forest loss, and pollution. Hunting and direct human persecution also affect a large number of declining European species.

BirdLife International has divided the 195 European species with an unfavourable conservation status into three categories. Twenty-four of these, ranging from the large Dalmatian pelican (*Pelecanus crispus*) to the small aquatic warbler (*Acrocephalus paludicola*), figure in the first category – species of global conservation concern.

One of these species, the representative of the grassland species, the great bustard (*Otis tarda*), declined rapidly in much of central and eastern Europe, and is highly threatened in its European stronghold – the Iberian peninsula. It was once a widespread species in Europe, where 150 years ago its breeding range extended even to the United Kingdom and Sweden. Now its fragmented European populations total less than 30 000 birds.

The rarest and most poorly known species in Europe is without any doubt the slender-billed curlew (*Numenius tenuirostris*), which sadly is on the verge of extinction. It migrates from its breeding grounds, presumably in Siberia, through Europe to north Africa. With an estimated population of less than 250 birds, the conservation of this species is indeed a formidable task.

BirdLife International's European Important Bird Areas Programme, which was launched in 1990, identifies a network of over 3 600 sites across Europe covering 7 % of the whole continent. Fortunately, many of these important bird sites are already protected areas and offer a sanctuary for many birds falling within the category of globally threatened species. In spite of this fantastic conservation work the situation for many birds in Europe is a serious one.

And, lest we forget, birds act as valuable environmental indicators, warning us of impending environmental problems. Looking at the situation of many European bird species, the message is loud and clear: the health of the European environment in general is far from being in good shape.

Joe Sultana
Dar ta' Gajdoru / 3, Gajdoru Street
Xaghra
Gozo XRA 104 Malta
jsultana@global.net.mt

G. Grande/Bios

Black stork and chicks in the nest in Spain

The return of the European bison

S. Cordier

European bison (Bison bonasus)

In the 20th century the European bison (*Bison bonasus*), the largest European mammal species, nearly went extinct twice: at the end of the first world war and again at the end of the second world war. In 1945 no animals survived in the wild and only fifty-four remained in zoos. If it hadn't been for some Polish scientists, that would have been the end of the species. They organised a captive breeding programme in zoos and special breeding stations like in Bialowieza in eastern Poland, the last area where the species had lived in the wild. Bialowieza was also the first place to release and reintroduce the European bison back into the wild again in 1952.

A major problem during this restoration programme was (and still is!) the fact that only nineteen (genetically different) founder animals had been available, from two different bloodlines – the Lowland line (7) and the Lowland-Caucasian line (12). However, using a traditional pedigree book system, inbreeding was prevented as much as possible by carefully selecting animals in the exchange between breeding centres.

Gradually, since 1952, more animals have been reintroduced into the wild in Poland, Russia, Belarus, Ukraine and Lithuania. Of the current total number of 3 000 European bison in the world, over 1 600 are free ranging in some 30 separate herds in these countries.

A risk of inbreeding

Recently it has become clear from modern genetic analysis that there is a serious risk of inbreeding and loss of founder genes when animals are released into the wild again, due to social and reproductive behaviour, in particular through male dominance. Unfortunately this has happened already in some of the earlier established free-ranging herds.

For new reintroductions, therefore, a careful and, as much as possible, genetically-based selection of suitable animals is made by the office of the European Bison Pedigree Book (EBPB) in Warsaw. A DNA database would be an essential tool for this job, but lack of funding has made this impossible so far. Also, the origin of animals from different places, the resulting high transport costs and veterinary rules, make it difficult to "speed up" the programme to create new free-ranging herds and to link up existing ones.

In spite of these difficulties, the number of reintroductions is steadily increasing: three new herds in Russia, one in Poland, and additional introductions are planned for the near future in Slovakia, Romania, Latvia, Germany and the Netherlands.

The Large Herbivore Initiative (LHI), founded by the World Wide Fund for Nature (WWF) in 1998, has chosen the European bison as its logo and has been supporting and facilitating the funding for the restoration of this most impressive European animal. Together with the World Conservation Union Bison Specialist Group, the LHI has participated in the preparation of a Species Action Plan.

This plan will be ready this year and is to be adopted by the Bern Convention of the Council of Europe. It will hopefully be the overarching "road map" for the countries of Europe, towards a real return of the European bison to European nature.

Fred Baerselman
Co-ordinator Large Herbivore Initiative
WWF International
c/o WWF NL PO Box 7
NL-3700 AA Zeist
fbaerselman@wwf.nl

Landraces and old breeds

The history of mankind is very closely connected with cultivating the soil, harvesting crops and raising livestock. Recent discoveries indicate developed agriculture as early as around 7000 BC and show evidence of animal domestication thousand of years earlier. Man's domestication of plants and animals caused changes in their form which in the past caused no profound consequences to the environment. Traditional systems were the result of the accumulated experience of indigenous farmers living in close contact with the natural world and interacting with the environment, without access to methods of production and capital from abroad or modern scientific knowledge. Nevertheless, during the last few decades, increased intensification and specialisation have changed the genetic diversity of crops and livestock and have had a serious impact on wild species and natural habitats. Developments in agriculture throughout the world are associated with genetic erosion, demonstrated by the loss of formerly favoured crop varieties, genes and alleles, and domestic animal breeds in the field. Even in developing tropical countries the increasing pace of agricultural development has begun to impact on the original seeding grounds of crops and their diversity, which has led to a warning that the genetic variety that is needed for future breeding of crops and domestic animals could be lost. Modern cultivars and breeds have a relatively narrow genetic basis and new sources of diversity for breeding are therefore being sought.

An important gene pool

In the light of these facts and development, the importance of old breeds and landraces that have arisen through the combination of natural and human selection has become more evident. These represent a valuable part of the gene pool as they contain most of the intra-specific genetic diversity. This is mainly due to certain valuable characteristics through which they can significantly contribute to the improvement of new cultivars and breeds and to the widening of their genetic basis. Among these typical valuable characteristics can be mentioned, for instance, adaptation to local climatic conditions and tolerance to stresses in the local environment, resistance to diseases, yield stability, high content of specific nutrients, ability to accumulate certain substances important for growth, relatively low demand for fertilisers and pesticides, and their traditional and local cultural value. Landraces and obsolete cultivars and breeds are therefore valuable material in low-input agricultural systems, in organic farming, as well as in landscaping. Ecotypes and landraces are mainly found among grasses, fodder plants, neglected and alternative crops, fruit trees and other local tree species. Old animal breeds prevail among horses, cattle, sheep, goats, pigs and domestic fowl. The most valuable of them form an integral part of our natural heritage and therefore deserve conservation.

Milena Roudná
Ministry of the Environment
of the Czech Republic
Vršovická 65
CZ-100 10 Prague 10
roudna@env.cz

Europe below the ground

This shot taken on 24 May 2003 shows two mighty entrenchments, the ground plans of semicircular dwellings, and a web formed by the borders of fields and paths. They appear as dark lines through the ripening wheat. The huge perimeter ringed with several parallel ditches and the traces of dwellings enclosed in this space date from the Neolithic era. The oval enclosure visible at the top of the photo, with its single broad surrounding ditch, together with the paths and the narrow trenches bordering the fields, are from a more recent period. The ditches are identifiable by the deeper green of the leaves and the greater height of the plants growing on the surface. In fact even thousands of years later, the memory of the soil retains the imprint of every incursion into it – ditches, pits or post-holes. In the loosened, porous earth that fills up these excavations, the root complex of the cereal crops finds favourable conditions for absorbing water and nutrients. The above-ground portion (stems and leaves) reacts with stronger growth in sharp contrast to the growth of the "poor neighbours", plants which must be content with the less fertile natural soil. Conversely, the masonry structures present in the ground, such as the basement of the Roman villa at Sontheim (cover picture), obstruct the spread of the roots and prevent them

from reaching the moisture and nutrients in the deep soil strata. At the surface, this results in a lower leaf area index, shorter stems, puny growth and inadequate swelling of the seeds, so that the lighter-coloured vegetation draws a picture in the shades of a photo negative. The pale grey patch in the top right-hand corner of the photo is not yet under plant cover; a pallid line is the sole indication of the wide ditch filled with ploughed earth. It can be seen from such views that these vegetable tracers or "phytographic indices" are short-lived phenomena obliterated at harvest time if not earlier, possibly having been erased by storms and hail. Looking at this spectacular aerial photograph, it is hard to imagine that the Tavoliere area, one of Europe's richest regions for archaeological and historical sources, may nonetheless see them disappear soon, destroyed by the intensive agriculture which the European Union subsidises – unless rapid steps are taken.

Otto Braasch
Member of the Air Archaeology Research Group
Matthias-Hoesl-Str. 6
D - 84034 Landshut
otto.braasch@landshut.org

O. Braasch

G. Trotzig

This Carolingian mount found in Sweden is a small and lovely proof of international trade in the 9th century.

Ten years of protection of the archaeological heritage

The archaeological heritage of Europe is full of contradictions. On the one hand, there are some obvious and generally recognised monuments, popular among visitors. On the other hand, the most important evidence from the past, from the scientific point of view, may not be so spectacular. Large parts are hidden in the ground and not revealed until the bulldozers of the developers begin their work. At this point economic and other dominant interests are more likely to win compared with the less obvious archaeological value.

All over Europe in the 1980s the need for new motorways and airports, not to mention the replanning of old towns, started an enormous development. Large-scale operations soon showed how vulnerable the archaeological heritage in fact was. Numerous unknown monuments and sites turned up in the working areas creating problems for both the authorities and the developers. At this time very few countries had protective legislation for the archaeological heritage which could cope with these consequences. The Convention on the Protection of the Archaeological Heritage of 1970 turned out to be insufficient and inadequate and the Council of Europe took on the task of revising it. For this purpose a working group was established consisting of representatives from sixteen of the European member states. A practical legal problem for the creation of a new convention turned out to be the already existing one, as a convention, however obsolete it may be, cannot just be eliminated. The initial idea had been just to amend and modernise the old text, but this was not possible for legal reasons. So the final solution recommended by the legal advisers was to replace every line with a new one and at the same time delete the old. The working group discussed and scrutinised every line. It was not possible to reach total agreement on the exact wording immediately. The efficient work by the Secretariat between the meetings cannot be overestimated. After each meeting, the delegates, as homework, had to make sure that the texts were firmly established within ministries and authorities in their home countries, in order to pave the way for the final signing.

When you compare the old and the new or revised convention, the main difference is the change of perspective, from excavations and finds to the archaeological heritage in a much wider sense, a part of the cultural landscape. Another central idea is the conviction that the struggle for the archaeological heritage could not be won by archaeologists alone.

A shared responsibility

Politicians, decision-makers, planners and developers all have to share the responsibility. Educators at all levels also play a very important role. To achieve this ideal state of affairs they should not only be confronted with the problems. No, they must also be invited to take part in the good things and share the joy and excitement, for instance of new discoveries. Most important, however, is the participation of the public at large, the media and others with influence on the politicians.

Looking at the convention today I would like to pick out the following points as being the most significant. The definition of the archaeological heritage is as wide as possible. Of great importance is the new concept that archaeological remains may be situated both on land and under water. It means that even shipwrecks are included. This has always been a highly contentious issue, as it is connected with disagreement between countries concerning the extension of their territorial waters. The possibility of creating archaeological reserves even where there are no visible remains on the ground and in the water is another application of the new perspective.

A fresh idea is that for the examination of monuments and sites non-destructive techniques must be used as far as possible, rather than excavation. Important too is the stipulation that excavated remains should not be left exposed unless suitable measures have been taken for their protection.

Archaeological material should be kept under the best possible conditions. This may be one of the most challenging tasks for museums, as archaeological research material does not look the same today as it did a few years ago. Modern archaeological science opens up many new perspectives, provided that handling and storage do not spoil the opportunities. The idea of integrated conservation is fully established. The principle of "polluter pays", that is, whoever causes the destruction of an archaeological site should be obliged to pay the excavation costs, was discussed at great length and was put forward boldly in the draft convention.

It had, however, to be modified for the final text, since it was too provocative for certain states. This was a pity as it has two major advantages: first it encourages developers to avoid ancient monuments and sites in the first place and secondly, the necessary funds would be available if the worst comes to the worst. The importance of developing public awareness is stressed in Articles 9 and 10 of the convention, which deal with the controversial question of trade in archaeological objects. This trade is not illegal or immoral as such, but the problem remains as to how the merchandise emerges onto the market. Finally I would like to underline the importance of the provision for continuous monitoring of the application of the convention.

A convention takes time to have its full effect. After a decade it is only possible to get a hint of its impact. At the beginning of last year thirty-seven out of forty-five member states of the Council of Europe had signed the convention and twenty-five had also ratified it. So far, at least two countries have taken on board the full consequences of their ratification and have totally reformed their protective legislation. Considering the rather radical view of the convention, I think the reception of it is promising for the future, not only for the protection of the archaeological heritage, but also for cultural co-operation within Europe as a whole.

Gustaf Trotzig
Royal Academy of Letters
Box 5622
S-114 86 Stockholm
gtrotzig@vitterhetsakad.se

To search or not to search: the Slovenian example

"And they who relate things past, could not relate them, if in mind they did not discern them, and if they were not, they could no way be discerned."

St. Augustine, *Confessions* 11,17

The material remains of a network of memory exist in the space that surrounds us, which continually renews or decays, expands and fragments. Thus, our landscape presents a palimpsest of all the numerous cultures that have written their meaning into it and have left their mark on it. This historical landscape is the place of recognised, more or less visible monuments and sacred places, as well as being the space of an invisible, underground network of forgotten memories, from which, as from the all-extensive mycelia, these monuments and sacred places come into existence and grow. Archaeological heritage forms the greater part of this invisible network and its visibility is dependent on archaeological research. Archaeological heritage is, in this context, a historical source of the human past. It is, therefore, logical that the soil layers, riverbeds and seabeds that contain archaeological information are the subject of preservation. It is from this fact that is derived the clearly defined legal demand that archaeological excavation should be undertaken only as an exceptional form of preservation, when and where this material record is threatened. Archaeological excavation necessitates the destruction of the remains that it seeks to preserve.

The question of archaeological heritage protection has unfortunately always been equated with rescue excavation in Slovenian archaeology, which is always defined by the relationship between the power of the investor and the capabilities of the authority to act in the special public interest. Excavation should always be the last possible method of protection, as these interventions in archaeological heritage never arise from the needs of archaeology itself.

Important changes

The relation between development projects and the protection of the archaeological heritage is a field which has undergone important changes in the last decade in Slovenia. These changes have been generated by the largest development project, that is the construction of the motorway network. The solutions that were put into effect in this state infrastructure project actually cast a long shadow on all other smaller projects, whilst exercising an important influence on the changes in methodology and heritage management doctrine at a conceptual level.

In 1994, a special body (SAAS) was set up to deal with the need to protect archaeological heritage within this project. It established a new model of protection, composed of the pre-excavation assessment of the archaeological potential of the area to be destroyed by construction, the excavation of all sites discovered and the post-excavation processing of the site archives that were created. Research was limited exclusively to the planned building intervention, which would make it possible to achieve not only a rapid and reliable assessment of potential archaeological sites but also the high degree of predictability (92 %) that was necessary for their protection prior to construction. The planners completely avoided all known areas of archaeological heritage on the basis of the Cultural Heritage Act and the Valetta Convention.

Surprising results

The results of the pre-excavation research phase were extremely surprising in terms of the numbers of sites discovered. They overturned the widely held belief that the area of Slovenia was archaeologically well known and also highlighted the biased nature of the traditional archaeological image of this area. Eighty-one new sites of a largely settlement nature have so far been found on 250 kilometres of motorway. The forty-eight excavated sites have shown that this does not only indicate an increase in numbers, but also the presence of cultural groups previously unknown in Slovenia. In many cases this has considerable consequences for the understanding of the past in this part of Europe.

In the course of the project, it was determined firstly, that many more and much better preserved material remains of past activity exist in the landscape than was previously suspected; secondly, that it was possible to detect and define these remains with non-destructive methods and techniques, and finally, that the existing archaeological heritage database was incomplete and insufficiently precise for planning purposes.

The knowledge and experience that were gained in the project are extremely valuable in the process of finding new solutions for the protection of archaeological heritage. Actual archaeological heritage management has tried and tested its capabilities, boundaries, constraints and weaknesses in the course of this project. Concurrently it has been shown that systematic investment in preventive search, detection and protection of archaeological heritage is, in terms of sustainable development and cost effectiveness, the only justifiable alternative to uncontrolled and seemingly cheaper rescue excavation.

Bojan Djuric
University of Ljubljana
Faculty of Arts
Department of Archaeology
Askerceva 2
SI-1000 Ljubljana
bojan.djuric@uni-lj.si

D. Snoj/B. Kerman

The extensive archaeological area at Nova tabla near Murska Sobota contains numerous remains of past activities from the Neolithic to the Early Middle Ages. Other important traces include the circular structures that are visible from the air, which were defined as Iron Age cemeteries during excavation.

The Bronze Age – the first golden age of Europe

"The first golden age of Europe": this was the slogan used by the Council of Europe between 1994 and 1996 to publicise a campaign to promote Europe's archaeological heritage. The aim of this "campaign for the Bronze Age" was to raise public awareness of archaeological monuments and historical sources and to improve people's understanding of the roots of European culture and values. Bronze Age civilisations, which existed in Europe during the second millennium BC, left behind many archaeological remains, as diverse as they are impressive – be they ruins that can still be seen in the countryside or museum pieces discovered in excavations. In the eyes of the uninitiated, the Bronze Age, compared to the Celtic, Roman or German eras, represents a period that remains largely closed off and buried in the shadows of European prehistory. The aims of the Bronze Age campaign were not just to promote the protection, maintenance and conservation of monuments, but also, more generally, to raise awareness of the subterranean existence of historical sources that are often invisible. However, there are also some visible elements which, as important cultural monuments, merit a new status in the European conscience; they include, for example, rock paintings, megalithic tombs, standing stones (either in lines or circles), groups of burial mounds, fortified hill-top human settlements or even lakeside villages (with dwellings built on piles).

The Council of Europe has supported "publicity" for archaeology and, in partnership with archaeological institutions in the member states, has sought firstly to inform the public by organising conferences, exhibitions and excursions and publishing easy-to-read booklets, and secondly to facilitate access to the results of research on the Bronze Age. In several countries, exhibitions have been held and documentaries about the Bronze Age have been produced in conjunction with television companies. These projects are still recorded today in various exhibition catalogues.

During the campaign, a forum for scientific exchange was set up for archaeologists and Bronze Age experts, comprising international exhibitions and congresses in many different countries. The campaign was launched at a major conference held at the British Museum in London in 1994. This was followed by several international congresses in Verona (Italy), Athens (Greece), Bohuslän (Sweden), Lisbon (Portugal), Neuchâtel (Switzerland), Poznan (Poland) and Traismauer (Austria), as well as a grand closing session and exhibition in Berlin in 1997.

There is no point in hiding the fact that, at first, the Bronze Age campaign was not always viewed by prehistorians and specialist institutions as a serious and sensible project; however, thanks to the numerous national and international events that were organised, a growing number of archaeologists were persuaded that, over and above scientific projects and publications, it is extremely important, as far as archaeology and protection of the archaeological heritage are concerned, to raise public awareness by organising large-scale campaigns.

Rüdiger Krause
Landesdenkmalamt Baden-Württemberg
Archäologische Denkmalpflege
Berliner Str. 12
D-73728 Esslingen
ruediger.krause@lda.bwl.de

K. Weiss

The chariot of the sun, an ancient bronze dating from the 14th century BC, was discovered in 1902 in a swamp near Trondholm (Denmark). Symbol of the Council of Europe 's campaign, it has been printed on numerous posters.

Preventive archaeology, public utilities and commercial competition: the French example

With a view to building a united Europe, a decision could have been taken to set up large, unified European public utilities by merging various national public utilities in areas such as transport, postal services and energy. Without any real political debate among the general European public, a free-market system was opted for instead: large, private international companies competing to offer consumers the best service at the lowest price. This latter system clearly presupposes fully informed consumers and genuine competition.

Should all goods and services come under this system, or should public authorities retain a certain degree of supervision over some areas? A nation's artistic and cultural output is part of its heritage and identity, and some countries are determined to protect it, asserting that the cultural sector is a case apart. In France, such a debate took place in 1998 in relation to archaeology. At the time, the Competition Council considered that since developers financed preventive archaeology, it was an economic activity covered by the rules of private commercial competition. The agency that had hitherto conducted preventive excavations for the Ministry of Culture – the Association pour les fouilles archéologiques nationales (AFAN) – should therefore be made subject to competition, and private archaeology businesses encouraged to start up. The Ministry of Finance supported this view. In the face of opposition from the entire scientific community, however, the government, at the suggestion of a committee of experts, drafted a different bill, which resulted in the Act of 17 January 2001.

A new system

Under the terms of this Act, preventive archaeology is a research activity, which must be closely supervised by the state. Excavations are conducted by a public research institute, the National Institute for Preventive Archaeological Research (the INRAP), which has 1 500 staff and is subject to dual supervision by the Ministry of Research and the Ministry of Culture. None the less, this institute is required to work with other bodies wishing to be involved in preventive archaeology, such as universities, the National Centre for Scientific Research, archaeologists working for local councils and *départements*, and voluntary organisations, with whom it signs agreements. Assessments and excavations continue to be authorised by regional archaeological units within the Ministry of Culture. Assessments are financed by a standard tax of 0.30 euros per square metre on the area to be assessed, and the excavations themselves by a tax of about 100 euros per cubic metre for sites containing archaeological layers, or according to the density of the remains.

This Act was approved by the French Constitutional Council, and then by the Competition Directorate-General of the Brussels Commission.

Taking effect at the start of 2002, the new Act implemented the revised Convention on the Protection of the Archaeological Heritage (Valletta Convention) by providing for much more systematic processing of development applications, whereas the previous system, which had no legal basis, was far more empirical and random. At the same time, the new institute gradually introduced a research policy, particularly in respect of publications, which had previously fallen considerably behind.

Problems arose within a few months, however. By introducing systematic processing of development applications and systematic payment of the archaeological tax, the Act automatically increased the number of dissatisfied developers. Moreover, the tax was too high for some small developers, yet inadequate overall, as the initial calculations had not allowed a sufficient margin. Lastly, the growing number of archaeological operations forced the INRAP to recruit more staff, at a time when the government wished to reduce the number of civil servants. Technical solutions could have been found to these various problems, but the issue became politically sensitive owing to the arrival of a new parliamentary majority in June 2002, with some MPs even disputing the validity of preventive archaeology.

An amended Act?

The Ministry of Culture consequently proposed amending the 2001 Act in 2003, by introducing a dual system: assessments, financed by a higher tax, are still the government's responsibility and are conducted primarily by the INRAP; excavations, however, are subject to competition. It was hoped by some that this would lower archaeological costs and avoid any increase in the number of civil service positions. Most archaeologists and their representative bodies are opposed to the reform, fearing a reduction in the quality of excavations in the light of examples in other countries.

France is consequently a very interesting example of the complex cultural, economic and political issues associated with preserving the archaeological heritage, a completely non-renewable heritage that helps to forge national identity.

Jean-Paul Demoule
Head of the National Institute for Preventive Archaeological Research (INRAP)
7 rue de Madrid
F-75008 Paris
jean-paul.demoule@inrap.fr

Fayole/Sipa Press

A twelve-metre long wooden boat from the 17th century was discovered during building work in Lyon (France).

A. Hafner

Diver between the eroded piles of an old lakeside village in Switzerland.

The underwater cultural heri

In 1975-76 the Committee on Culture and Education of the Parliamentary Assembly of the Council of Europe became interested in the underwater cultural heritage as a result of heated debate over a proposal to build ship-repair facilities in Navarino Bay in south-western Greece, site of a famous sea-battle in 1827, and also an area of outstanding natural beauty. In January 1976, the Parliamentary Assembly passed a resolution deploring this proposal, and was instrumental in the abandonment of the project.

The committee decided in 1977 to look at the subject in more detail, and appointed John Roper MP to prepare a report. The report was debated in the committee in 1977-78, with a hearing on the subject in Paris; in 1978 the Parliamentary Assembly adopted the report and accompanying recommendation (Recommendation 848) unanimously. This recommendation was, until November 2001, the only international instrument specifically dealing with the protection of the underwater cultural heritage.

A draft European convention on the underwater cultural heritage (see Recommendation 848, paragraph 6.a) was drawn up by an ad hoc committee of experts from the member states, but an impasse was reached in 1985 because of controversies between maritime lawyers concerning territorial disputes and considerations arising from the commercial exploitation of the seabed, and no text was adopted.

For many years there was little sign of progress, and confusion still surrounded the protection of cultural property in international waters beyond the limits of national jurisdiction (twelve or twenty-four nautical miles). These questions were not resolved by the revised archaeology convention (Valletta 1992, in force since May 1995), even though this had been drafted to cover both land and sea archaeology.

Other Assembly recommendations for action at European level were not followed up: there was no progress at regional level, by agreement between states bordering on the same sea or part sea (Recommendation 848, paragraph 6.c). Nothing was done at the European level to further relations with the amateur diving associations, who, if not educated, represent one of the greatest threats to the underwater cultural heritage; the second part of the original mandate of the ad hoc committee was never fulfilled: "to draft a recommendation to member states on means of furthering the co-operation between the different bodies and categories of persons concerned with the protection of the underwater cultural heritage."

One recommendation of the Roper Report was carried out: a European Group for Underwater Archaeology was set up, under the aegis of Pact (now part of the European Federation of Networks, with its offices at Unesco). It met regularly between 1982 and 1988, before losing its funding, and sponsored a series of successful international training courses. A revived group could resume this important task.

The importance of training

The training function was an important aspect of the first International Conference on Underwater Archaeology (IKUWA 1) in Sassnitz in 1999, and will be at IKUWA 2 on Lake Zurich in 2004 (held to celebrate 150 years of archaeology in Swiss lakes. Co-operation between the states bordering the Mediterranean and the Baltic is important for exchange of experience in excavation, conservation and training; so too is co-operation with other regions of the world with a rich underwater cultural heritage. For as countries improve their national heritage protection legislation, treasure-hunters move on: from Australia to South-East Asia; from Portugal to Brazil and Mozambique. We must help the countries that become victims.

Training courses developed by the Nautical Archaeology Society (UK) are used widely in Europe, but also in Latin America.

By the early 1990s, on the initiative of Drs Prott and O'Keefe, who had been the legal advisers on the Roper Report, a number of the main issues were already being studied by the International Law Association, preparing a draft international convention. Account was now taken of the UN Convention on the Law of the Sea and of the views of marine archaeologists.

In the Council of Europe an intergovernmental group of experts met in December 1994 in Strasbourg within the context of the European Plan for Archaeology and drew up proposals for further practical action. The Parliamentary Assembly's Sub-Committee on the Architectural and Artistic Heritage took up the subject again in September 1995; the discussion concentrated on possibilities for further co-operation in practical areas: training, public awareness (sub-aqua clubs), salvage (also a legal problem), and regional activities.

By 1995-96 the legal initiative had passed to Icuch (the International Scientific Committee on Underwater Cultural Heritage of Icomos – the International Council on Monuments and Sites), Unesco and the International Law Association. The Icomos International Charter on the Protection and Management of Underwater Cultural Heritage was adopted in October 1996. Limitations of space do not permit me to quote, but as a statement of the importance of the underwater cultural heritage and the current

A bronze statue of a dancing satyr, during and after conservation a on the sea bed in the Sicily Channel off Mazara del Vallo and recove

tage

threats to it one cannot improve on the introduction to the charter.
The Parliamentary Assembly showed renewed interest in the context of Expo '98 in Lisbon (where it organised a round table). Edward O'Hara MP presented a new report, adopted in November 2000 (Recommendation 1486), on the maritime and fluvial cultural heritage. This recommended (paragraph 13) that the Committee of Ministers support the Unesco initiative; encourage states to ensure that the underwater cultural heritage is protected from commercial recovery operations from the high seas; encourage regional co-operation on the underwater cultural heritage between countries bordering on the same sea or part sea; and in particular encourage the conclusion of such agreements as will mitigate the sovereign immunity which states retain over vessels of war and other state-owned vessels wherever they are sunk.

An initiative bearing fruit

The Icomos charter now has a new life, forming the basis of the annex to the Unesco Convention on the Protection of the Underwater Cultural Heritage (outside territorial waters) approved by the Unesco General Assembly in November 2001. For many years we have expressed the hope that the 1977-78 initiative of the Parliamentary Assembly would one day bear fruit; now it has, and we must be glad. But the convention will only come into effect when twenty member states have ratified it; the meetings of experts to prepare the convention showed that the voice of the archaeologists could not be heard in many national delegations: sixteen states abstained, including most major maritime powers, and four voted against. The first ratification (by Panama), with three more imminent, has been done. Icuch regards as the worst blow yet given to the same convention, breaching many rules of its annex, the decision by the British Government to approve a plan for the recovery of a 17th century shipwreck off Gibraltar, believed to contain an enormously rich cargo of bullion; it would be helpful if the details of this agreement were made public.
Discussions at many conferences have made clear how closely linked the subject is with that of environmental protection and that, for example, the specific subject of underwater reserves is a common interest. The threats are the same: from development of tourism and transport infrastructure, especially port (re)development, industry and fishing, mining and quarrying. The importance of developing cultural heritage reserves (like environmental reserves) has not received sufficient attention; nor has the question of preserving wreck sites *in situ* on the seabed. This avoids all the problems of conserving materials raised from underwater contexts; but some will argue that wrecks once discovered are inevitably going to disappear if left on or in the seabed, ravaged by treasure-hunters. A graphic example is provided at Mazarrón on the Spanish coast, where construction of a marina has progressively denuded a bay and exposed two Phoenician wrecks.


A. Hafner

Diver painting piles on a plexiglas sheet

In conclusion, the following have to be stressed:

- do not let us lose sight of the need to improve national legislation as well as to ratify the Unesco international convention;
- education and training are essential, especially to sensitise the amateur diver whom we must involve, and others, such as the construction industries;
- the draft conventions, from the Council of Europe draft to the Unesco draft, have had an educative value by their very existence; so, now, does the Icomos charter, an invaluable statement of principles;
- there was clearly a feeling in Europe after 1990 that the era of state control was over and that "total freedom" had arrived. There is a necessary political debate to be continued about the proper role of the state in areas such as protection of the cultural heritage;
- we hear a lot about "ownership", which is a private matter, but protection of cultural heritage is a public matter – and we must concentrate on this. The principles of our position on the underwater cultural heritage must be the same as our position on the terrestrial cultural heritage.

David Blackman
Centre for the Study of Ancient Documents
GB-Oxford-67 St Giles,OX1 3 LU
david.blackman@classics.ox.ac.uk

t the Istituto Centrale per il Restauro, Rome. It was discovered red from a depth of about 500m.


R. Petriaggi

Landscape planning in Latvia

Archaeology has evolved and maintained a strong tradition of public support and respect. As pointed out by Kristiansen, archaeology was always national in character, forming an important part of national history and ideology.

Analysing data about land use fifty to seventy years ago in areas of archaeological sites in Latvia shows that about half the sites were used for agricultural purposes as arable land or pastures, but the other half were covered with forests as they are today. The use of a large part of the archaeological sites has continued over the centuries up till today. Some of them were built over with new housing, stone castles and, later, manor houses and villages, which were surrounded with parks and where in many cases the archaeological site was included in the park's composition. About 80 % of sites show evidence that they were also intensively used for military purposes during the two last world wars, when extensive defence ditches were constructed on hill forts, disturbing layers of archaeological interest and ancient earthworks.

Hill forts, thanks to their dominant location in the area and panoramic views, were and still are used as cultural centres. Meeting places of local and regional significance, they became specially maintained with new, larger entrances, steps built into the steep slopes, symbolic trees such as oak and lime, and recreation facilities with benches and open-air stages. The aesthetic values and the symbolic significance of many trees and shrubs were and are still important. They are often referred to in traditional Latvian folk songs and poems.

The early years of the 20th century witnessed the birth of the nature conservation movement. This movement adopted the romantic view of nature, which also came to be reaffirmed in connection with the care of archaeological remains. Field studies of archaeological sites made at the end of the 1990s showed certain visual landscape types and the reasons are as follows:

- hill forts' surfaces have different types of vegetation due to topography, orientation, and soil conditions. The first new growth covered northern slopes of the mound and more eastern areas, and later other parts of the hill;
- settlement site areas were used for cultivation or pasture for longer periods and their topography and soil conditions are similar over the whole area;
- burial sites are mostly covered with pine trees, because they tend to be located in drier, less fertile sand or gravel areas;
- places of religious significance are covered with vegetation, because these sites were not specially maintained.

For this reason it is not possible to see the earthworks and appreciate the visual landscape around sites.

Mara Urtane
Latvia University of Agriculture
19 Akademijas Street, Jelgava
LV-3001, Latvia
m_urtane@cs.llu.lv

M. Urtane

On the left, the hill fort of Tervete covered with grass, on the right, Middle Age castle ruins which were later included in the garden of the manor house. Today it is part of theTervete Nature Park.

The European Associa

The European Association of Archaeologists (EAA) was founded in 1993. The membership has reached just over 1 250 archaeologists from about 50 countries. Of these, around 25 % are members from countries in the former eastern bloc.

Mission

The mission of the EAA is, firstly, to integrate European archaeology and to create a forum for the exchange of information, ideas and results of research; to manage the European archaeological resource and promote proper ethical and scientific standards for archaeological work; to develop the profession at a European level and promote the interests of professional archaeologists in Europe.

Secondly, the EAA, as the only democratic organisation of archaeologists at the European level, wants to represent the interests of archaeology in Europe. This is done, for example, by working as an NGO with the Council of Europe, which has granted the EAA consultative status, and with the EU. Other activities include sending representatives to international meetings where heritage management issues are discussed. The EAA promotes the ratification of European treaties such as the Valletta Convention and European Landscape Convention, but also of treaties such as the Unesco and Unidroit conventions on illegal trade and cultural property.

Activities

The EAA publication, the *European Journal of Archaeology* (EJA), is an important forum for international scientific discussion. Three issues are published annually, which are also distributed widely in libraries. As a means for communication between its members, the EAA also publishes a biannual newsletter, *The European Archaeologist*, and maintains a website at http://www.e-a-a.org.

Each year, the EAA organises a conference in a different European town. This year it will be in St. Petersburg, Russia, on 10 to 14 September 2003. The meetings are attended by around 650 archaeologists from all over Europe and have

Nature and archaeology hand in hand: the example of the Federsee

tion of Archaeologists

developed into the major annual archaeological event in Europe. The EAA also has committees which are intended to keep work going between meetings on issues which are considered to be of importance. In 1997, it adopted a "Code of practice for European archaeologists", which is the first professional code at a European level. In 1998, this was followed by the adoption of the "Principles of conduct for archaeologists involved in contract archaeological work". Both these codes can be seen as important additional steps from within the profession, to facilitate work under conditions set by the Valletta Convention.

Since 1999, the EAA each year presents the European Archaeological Heritage Prize to an organisation or an individual with outstanding merits and achievements for the study or management of archaeological heritage at the European level. It can be awarded for any contribution that is outstanding and of European scope or importance, it does not have to be a scientific contribution. The prize has so far been awarded to the Portuguese Minister of Culture Dr. M. Carrilho, for his role in the efforts to preserve the Palaeolithic rock carvings of the Côa Valley, to Dr. M. Biörnstad, former State Antiquarian of Sweden for her role in the promotion of archaeological heritage management in Europe, to Dr. O. Baasch from Germany for his achievements in the development of aerial archaeology in Europe, and to Dr. H. Cleere from the UK, for his pioneering contributions to the organisational development and study of archaeological heritage management.

Willem J. H. Willems
State Inspectorate for Archaeology (RIA)
Engelandlaan 198
NL-2711 DX Zoetermeer
wwill@archinsp

Landesdenkmalamt

The Federsee in the foreground and the Alps in the background

The Federsee Basin near Bad Buchau (Baden-Württemberg) is the largest lower bog landscape in south-west Germany. As an archaeological finds landscape and nature reserve it possesses European rank. Because the heavily saturated peat covering and the exclusion of oxygen have preserved not only wooden floors and walls of several hundred New Stone Age and Bronze Age houses, but also numerous objects made of decomposable organic materials, pollen, timber and large botanical remains, the bog serves as a unique resource for modern archaeology and for the reconstruction of prehistoric environments using scientific research methods, such as pollen analysis and dendrochronology.

On the grounds of its diversity, from still open lakes and extensive reedbeds and lower bogs to the last remains of moors, the 3 300 hectare wetlands offer a biosphere for numerous animals and plants. Some rare bird species have their largest population density in the state at Federsee. The peculiar climatic situation of the reedbeds offers botanical relics of the last Ice Age conditions that are otherwise only known in northern Arctic Europe.

With progressive drainage of the bog, the still hidden archaeological monuments and plants and animals in the reed meadows are equally seriously threatened. In order to prevent further drying-out, the bog water levels must be raised. The Federsee bog has been a European LIFE-Nature model project for the "preservation and development of nature in the Federsee landscape", with a support sum of 1.6 million euros since 1996. The acquisition of land and restoration of a suitable water balance in the wetlands are its central issue. The District Office for Conservation and Rural Preservation, Tübingen, the NABU-Conservation Centre, Federsee and the Baden-Württemberg Office for the Protection of Ancient Monuments are working hand in hand with other local authorities to bring around 2 900 hectares of wetlands under special protection.

Helmut Schlichtherle
Landesdenkmalamt Baden-Württemberg
Fischersteig 9
D-78343-Hemmenhofen
Helmut.schlichtherle@lda.bwl.de

From knowledge to action: training in the

Looking after "old stones": what a great job to recommend to one's children, nephews, nieces and grandchildren. Admittedly, it is not a very lucrative profession, at least in the short term, but it brings enormous personal reward, with the satisfaction of having helped bring a little beauty into a world which is clearly doing its utmost to make itself look less and less attractive. The historical heritage is often seen as the antithesis of the modern era; protecting it therefore appears to be an act of resistance to the world's decadence, with its ephemeral pleasures, its ever-accelerating pace and its increasingly unbridled consumption of goods and services.

Yet what is conservation of the historical heritage if not a service in itself? As such, it is controlled by the interplay between supply and demand. Like any other activity, it is exposed unprotected to the rules of the market, required to produce measurable results and too often dependent on public monies for which competition is increasingly fierce.

Preparing the next generation to fight for its survival, such as by training it in heritage conservation, is therefore an act of charity. Using technology, rationalising, certifying, boxing up and reorganising. Oh, if only "old stones" were not so stubborn! War, erosion, modernisation, redevelopment: they have survived so many trials! They may have lost their splendour of old, but they still carry a message. And maybe that message is so far removed from modernity that it is once again in keeping with the spirit of the age, hungry for new alternatives which it grasps without hesitation.

Elements of the heritage

There is therefore no place for naivety in activities involving elements of the heritage, and even less so in the provision of training in these activities. It is also important to sweep aside a few simplistic ideas along the difficult road from realisation to knowledge and from knowledge to action. What are we talking about here? The environment, towns and cities, buildings, furniture, the visual arts? We mean all of these at the same time, hence the choice of the word "elements".

Even in a dilapidated state, elements of the heritage are rich in history and significance, two components that are no less important than the physical aspect, but which unfortunately are difficult to describe, measure and make accessible.

Elements of the heritage do not need to shine as gloriously as they did long ago because that gloss which was once brand new has now gone, a victim of history, natural wear and tear, abuse, foolishness and redevelopment.

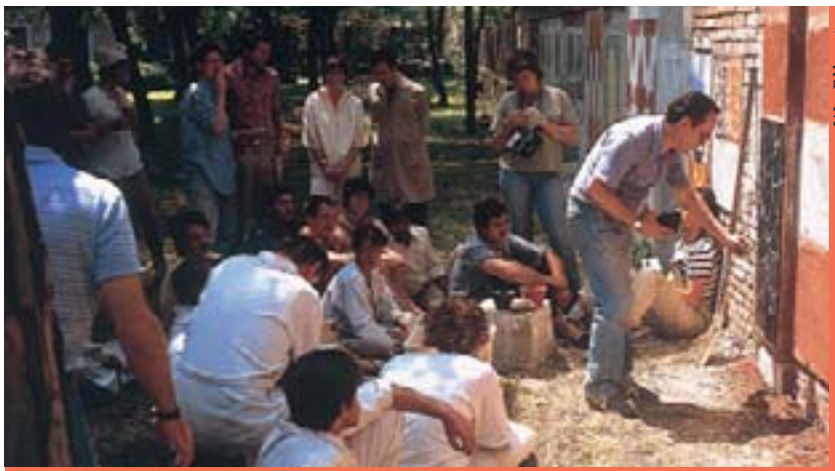
Renovating elements of the heritage does not necessarily involve the same techniques as those that were used to create them. Indeed, objects have changed and techniques themselves are lost forever because ancient materials have disappeared, despite the claims to the contrary by skilled and/or well-meaning craftsmen. On the other hand, new techniques and materials can turn out to be much more efficient, provided of course that knowledge, wisdom, intelligence and patience are exercised.

It is illusory to think that traditional techniques and processes can be revived, for they were inseparable from their context, anchored firmly in the social networks of the time, taught as part of apprenticeship schemes that no longer exist, practised in guilds and, finally, steeped in knowledge and ignorance, empiricism and stubbornness. These days, we need the intelligence to evaluate the knowledge and expertise of yesteryear against modern criteria, to preserve what we believe to be useful and to add new elements in order, as far as possible, to achieve standard practices, whilst realising that we will inevitably be criticised by future generations.

As far as the conservation of the historical heritage is concerned, makeshift repairs are unforgivable. Groping around in the hope of finding the right method by trial and error, drawing each time on the experience gathered, is a commonly held attitude, but one that is harmful to the heritage. The importance of basic and further training, based on quality requirements and verifiable qualifications, preferably recognised internationally from the outset, cannot be overemphasised.

With regard to basic or further training, national programmes are pointless. As it happens, heritage conservation is benefiting from an unexpected source of good fortune: as a discipline that, with the exception of university courses in restoration, was introduced relatively recently into the rigid structure of national education systems, it is able to make the step up to the European and global levels, look inquisitively and critically at national programmes designed to clarify the situation – I am thinking of the British National Vocational Qualifications (NVQs) – and either adopt them as they are or adapt them to a rapidly growing European market. It would therefore be just as modern as the elements of the heritage were in their time: avant-garde from the technical, stylistic and international marketing points of view, which we all too easily tend to forget.

Conservation of the historical heritage has a social, economic and technological future as long as it is aware of its potential to innovate, exploits that



W. Elbert

Training course on the use of a coating with stucco, the marmorino.

conservation of the historical heritage

potential fully and learns how to sell itself. Europe's future depends on the movement of people, ideas and knowledge, a practice as old as the hills which gave birth to what we are concerned with here – elements of the heritage.
Conservation is a creative process, even if traditional conservation experts are reluctant to accept it as such. Any decision concerning the conservation of the historical heritage requires an element of creativity, which is why it can be dangerous if the decision-maker is not fully competent. Here also, action is needed, but who should take it?

Meeting the challenge

The Council of Europe decided to take up the challenge a little over twenty-five years ago: in consultation with experts from numerous countries, it created the Venice European Centre for the Skills of Architectural Heritage Conservation, an educational establishment open to anyone seeking advanced training in heritage conservation. Although it was originally aimed only at craftsmen, over the last few years it has also attracted architects, engineers, technicians, restorers, art historians and teachers. It aims to build bridges not only between the professions and their different experiences and skills, but also between old and new techniques, research and its applications, analysis and understanding, and knowledge and action. The centre also endeavours to allow innovation to play a full part, in order, through a creative process, to link the aesthetics of the past to those of the present.
Although this pilot institution was unique in Europe when it was first opened, it is now able to continue its development in partnership with similar bodies, in the knowledge that its task will never be fully completed, that the solutions it finds will never be definitive and that it will always be necessary to meet new needs. However, it will also know that it has achieved something for Europe and for the elements of the heritage which leave as indelible a stamp on the continent as its inhabitants.

Wolfdietrich Elbert
Head of the Cultural Policy Division
Council of Europe
wolfdietrich.elbert@coe.int

Spatial planning and archaeology

With the enlargement of the European Union considerable effort will be devoted to the cohesion agenda that is seeking to reduce differences across the new Union in terms of economic prosperity, development opportunities and quality of life more generally. It is an agenda for growth which will potentially have a significant impact on the physical world around us.
In recent years sustainability has increasingly become a watchword, but one with different emphases and nuances. Essentially, however, sustainability is about husbanding precious, irreplaceable resources in a responsible way so that future generations will be able to enjoy them. Focus to date has been very much on the natural environment, on climate and pollution and also on social and economic sustainability. But what about the historic environment around us which contributes to our sense of place and identity and is very much the witness of our past history? Very little of the countryside around us is truly natural; it is rather the result of man's interaction with his environment over the centuries. Archaeological remains are part of this environment whether they are visible standing monuments or undiscovered remains buried beneath our feet. They contribute to our understanding of ourselves and as such they are an important social and intellectual link between the present and the past, but, once destroyed, they can never be replaced.
Spatial planning is about social and economic outcomes but the stage on which development is enacted is the environment around us and the effective use of land is the territory of the spatial planner. The planner thus has a crucial role in managing, for the present and the future, the past dimension of our environment. There is both a duty of care to pass on to future generations what we ourselves have inherited and also a challenge to make this heritage resource valued by and relevant to present-day society through its contribution to social, educational and economic agenda.
The need to safeguard the historic environment has been recognised in the Council of Europe's conventions relating to architectural heritage (Granada), archaeology (Valetta) and landscape (Florence), and also in Cemat's "Guiding Principles for Sustainable Spatial Development of the European Continent". It is important that the principles set out in all these codes are not mere words but the starting point for action. In many cases potential impacts on the historic environment stem from some form of development and the associated decision processes fall within the domain of spatial planning. Responsibility for the historic environment, however, may reside in academic institutes, in government agencies or be more closely related to the planning process.
The historic environment is an integral part of sustainability and spatial planning and there is thus a need for a truly integrated approach, with planners, archaeologists and other environmental interests working together, both in terms of developing policy and in implementing it. We need to realise the true worth and potential of the historic environment and manage it in a sustainable way.

John Williams
Head of Heritage Conservation
Kent County Council
Invicta House, County Hall
GB-Maidstone ME14 1XX
john.williams@kent.gov.uk

The landscape: a record and a monument

The landscape in Italy (and elsewhere) still contains many tangible traces of its layers of history (even in regions having undergone the greatest transformations as a result of contemporary urban development): from primitive Italian civilisations to the Etruscans, the Romans, the Byzantines, the Lombards, the Church and major religious movements, the Communes, the Renaissance domains and finally the modern era of bourgeois revolutions. They consist of signs left by farmers and stockbreeders, craft workers and shopkeepers, landowners, company heads and workers, and so on. In 1972, archaeologist Ranuccio Bianchi Bandinelli wrote of the Italian landscape: "It is precisely these layers that give Italy and Italians their distinctiveness, the very essence of our personality"; he noted the need to "become fully aware" that the historical study of traces of the past is crucial in order to build the future.

The widespread realisation that the landscape, in its entirety, is a "cultural asset" worthy of preservation is a fairly recent development; it was a logical outcome of the process of placing greater emphasis on history and on the conservation of historic works by human beings (*manufacts*), which developed in the late 19th century and throughout the 20th century. It gradually extended to new kinds of artefacts, no longer focusing solely on artefacts of "major" artistic and historical importance, but also on the many "minor" artefacts, even though these have been carefully distributed throughout the country and are, therefore, often typical of particular areas; it no longer focused solely on artefacts from the most ancient times, but also on recent items that we consider to belong to a culture that now differs from contemporary culture: from monuments and churches, villas, palaces, castles, archaeological remains and rural buildings to urban centres and historic nuclei, industrial archaeology, gardens and, finally, the most recent "discoveries" (historic roads, canals, embankments, centuriations, etc.). National (and international) charters and documents recorded this process from time to time during the 20th century (the latest – Kraków, 2000 – for the first time also includes the landscape). Italian legislation on conservation of the historic and cultural heritage (Act 1089 and Act 1497 of 1939) contains, in a nutshell, the concept of the landscape as a record and, more uniquely, an item of natural beauty.

As a record, the entire country must be seen as a vast archive of both human history and nature (climate, vegetation, etc.) for those with the greatest level of understanding; the land is also a palimpsest, or a record in a state of perpetual transformation (this is a typical, inevitable feature of the landscape, which is a truly open page) that contains traces (but not all the traces) left by various eras; these intermingle with the traces left in turn by the present, and continually modify the landscape (unlike a process of mere stratification).

STF/Sunset

The volcano park on Lanzarote Island in the Canaries

Interpreting the landscape as a palimpsest

For decades, Italy has been involved, through either central government (the Central Institute for Cataloguing and Documentation) or, on a smaller scale, local government (regions, provinces and municipalities) in drawing up an inventory of its historic heritage: the databases compiled in the past have (despite their failings and lack of harmonisation) been used widely in urban and, to a lesser extent, regional planning to supplement a brief summary of historical events in particular areas, depending on the era in question and the main permanent geographical and cultural features. This information now serves as a useful basis for understanding the landscape's history and for further developing it. However, it is interpreted in terms of points, lines and areas, a kind of sum of items, which cannot convey the complexity of the functional, formal, symbolic and visual relationships that connected these items together to form structured systems. In Italy, for instance, historic villas with gardens, outbuildings, farmland and woodland combined to form full-scale agricultural holdings; these were divided into subsystems, each made up of a farm with rural residential and production buildings, a kitchen garden, a farmyard, its own fields and so on.

Recently, such data has been combined with standardised, detailed techniques for interpreting permanent features over vast areas of land; these techniques systematically identify ownership arrangements, land uses and property dimensions as well as buildings, canals, roads, minor works by human beings and so on, drawing on the most established historical maps in Italy (surveyors' maps since the 18th century, and Geographical Military Institute maps since the late

19th century). It is then possible to identify (although experiments along these lines have not yet received much publicity) the detailed historic functional systems that shaped each area, to interpret permanent features currently found there and to supervise transformations so that contemporary uses, additions and innovations neither impair nor destroy their capacity for being interpreted but, on the contrary, place concepts such as consistency and respect for earlier existences at the centre of the planning process.

The architecture of the landscape, or the forms and materials of which it is made, does not merely yield historical facts (records) but, through them, enables us to discover a series of messages that reveal the productive activities, patterns of community life, struggles, languages and so on of people who lived in the past. We can immediately interpret the historical and social situations that shaped the areas in question and now influence attempts to transform them (a genuine *monumentum-memento*). We can also interpret the meanings and values that have taken root in our cultural tradition, which act as a kind of filter that inevitably influences our thinking (iconographic representations, descriptions by travellers, local customs, etc.). These are sites of significance for the intangible collective memory.

The problem of interpreting the history of particular places lies, firstly, in the need to give regular, careful, meticulous consideration to the existence and physical permanence of traces of the past (including detailed aspects of design, materials, and techniques for building embankments, canals, etc., following in the tradition established by the historic heritage conservation disciplines). Such consideration is essential for any attempt at physical transformation (including the most innovative attempts) that is to be based on respect for the legacies of history. Secondly, it is important to ensure that such interpretations are neither exclusive nor reductionist; we must not forget the dynamic, ongoing process through which the sites that have reached us were established – that is, the very lives of the people who built them – since it has a significant impact on current economic, productive, cultural and social choices.

Each new generation of human beings cannot but start from the reality of the land shaped by the painful labour of past generations, which they shaped by means of highly specific forms, contours, materials and techniques.

Lionella Scazzosi
Corso Lodi, 78
I-20 139 Milan
lionella.scazzosi@tiscali.it

An architectural drawing spread over a wheat field

Summer drought has made the cereal crop outline with precision the plan of buried foundations. This is how an agricultural holding of the Roman province Rhaetia became visible to us on 23 June 2003.

Two English wartime pilots and archaeologists are chiefly responsible for the discovery and description of these indices which earned aerial archaeology its high standing. Having appreciated while on reconnaissance missions over France during the first world war the immense value of aircraft for studying the archaeological and historical landscape, O.G.S. Crawford built up precious practical expertise after the war. His lecture on 12 March 1923 to the Royal Geographic Society on "Air Survey and Archaeology" established the essentials of the method. Derrick Riley, a Royal Air Force fighter pilot during the second world war, had the opportunity in the intervals between fighting to observe and analyse the indices formed by vegetation in the environs of Oxford. His book *The Technique of Air Archaeology* published in 1944 is still in use today as a reference for interpreting these botanical messages sent to us from the Europe below the ground.

Otto Braasch
Member of the Air Archaeology Research Group
Matthias-Hoesl-Str. 6
D - 84034 Landshut
otto.braasch@landshut.org

The landscape as a concept

Landscape as a word is a natural part of our everyday conversation and whenever we hear this word we comprehend it without thinking about the manifold meaning of landscape as a concept. Certainly landscape as a concept is more complex than "the man in the street" would think.

I wouldn't say at the beginning of the third millennium that everybody will define the meaning of landscape differently if asked, but we can surely state even today that in spite of the considerable consensus among experts, only smaller groups show identical perception and approach concerning landscape. But let us stop here! Who are the experts?

In a certain sense we are all experts in this respect, most certainly you, dear Reader, since we all live in a landscape, we form it by our activities and, due to the unavoidable interrelationship, the landscape forms us as well. We are all experts in this regard because we believe or assert that we are, because we will hardly acknowledge that we are forming "something" without the relevant know-how.

A great number of highly qualified experts claim the authorisation of society for the general acceptance of their definition of landscape; however, landscape has a different meaning for a biologist, or a geographer, or an economist, or an architect and landscape architect, or even for a cartographer. Here I must mention that landscape means something different also for the poet. Miklós Radnóti, one of the greatest Hungarian poets of the 20th century, wrote in his poem about a small part of the world: "For whoever is flying over it, the landscape is a map… for me, it is my fatherland…"

Yes, somewhere the landscape is the fatherland of all of us, regardless that it is divided by borders of different countries. It is the fatherland of all of us and we have to protect and develop it. This is our common task regardless of our ethnic or national origin. The European Landscape Convention greatly contributes to the accomplishment of this common task, which I mention only because its definition of landscape is indispensable for promoting uniform thinking about this issue independently from the borders: "Landscape means an area, perceived by people, whose character is the result of the action and interaction of natural and/or human factors".

I only dared to cite the above definition, so well known to the readers, in order to express my joy that this definition exists, that it has generally been accepted by the signatories of the European Landscape Convention and by many others and also because I gathered confidence from this to try to suggest that one landscape architect – perhaps a little voraciously – might have phrased it otherwise.

K. Misley

The well-known Hungarian Puszta

People and landscape belong together

It is very important that people and landscape belong together, one doesn't exist without the other, therefore it is very important that landscape is understood and not just perceived by people. Landscape is not only a zone or an area but much more than that. Landscape is a multidimensional space embracing people, which is synthetised in the human mind. When we were talking about landscapes of the moon we could do it, because people knew and perceived the moon. However, one could hardly speak of landscapes in the case of unknown planets.

I know that this column in the *Naturopa* magazine is not the place for poetry, yet I cite the poet again to help me to express what landscape can mean: "For whoever is flying over it… What does the map hide? Factory and barrack, but for me a grasshopper, an ox, a tower, a farm, he [the pilot] sees factory and arable land through his field-glass, but I also see the dithering worker as well." Yes, the poet believes and knows that this is the landscape! The "dithering worker" is part of it.

I believe that it is – among others – a very important message of the definition of the European Landscape Convention that landscape changes, develops time and again as a result of human intervention and the forces of nature.

The human beings form the landscape according to their goals and perhaps to their interests or presumed interests, on many occasions assigning only functions satisfying daily needs to certain parts of the landscape. In the course of centuries different landscape parts have been created in the interest of satisfying the different needs of the people and these parts of the landscape are dominated by human activity and human intervention for a certain purpose.

What are the really characteristic functions providing a special appearance and a special role to certain parts of the landscape? In simple terms, the habitat function, the productive one, naturally, and within this industrial production and forestry and agricultural production, recreation and, as a result of "landscape development" over the last decades, the services function became a landscape development factor too.

In my opinion there is landscape corresponding to the above definition and there are no landscapes. I believe that it is very important from a theoretical as well as a practical point of view that the European Landscape Convention summarising the rules of the relationship between landscape and people and their coexistence deals with landscape and not with landscapes.

Naturally I have described the above by following an academic approach. I also have to acknowledge that, in practice, life sometimes, or even frequently, demands the opposite. Myself and several of my colleagues – who otherwise share the above-described academic approach of landscape perception – several times commit the "mistake" of talking about landscapes. However, we may only do this when we use it with the adjective indicating the different parts of the landscape satisfying our different needs. According to these differences we may speak about residential landscape, industrial landscape, agricultural landscape, resort landscape, and so forth. These might be different types of landscapes.

I sincerely hope that the European Landscape Convention – the approach of which is near to the slightly individual one described above – will become the "vocabulary" of landscape protection and development practice of an ever-growing number of countries.

Károly Misley
Office of the Prime Minister
Kossuth L. tèr 11
H-1055 Budapest
zobekazob@matavnet.hu

The battle against ugliness

In the Mediterranean, and particularly in Greece, a region known for the weight of its immense historic heritage and the fragility of its natural and built-up environment and ecosystems, landscape assumes even greater significance. Perhaps it is not accidental that Grecian and Mediterranean landscapes have been extolled by foreign visitors, travellers, and sojourners in the 18th and 19th centuries and have been extensively photographed and praised, chiefly in the 20th century, by renowned Greek and foreign photographers and writers.

The recent socio-economic developments in Greece (income increase, rural exodus, urbanisation, second homes) and the consequent modernisation in all fields of activities (mainly in agriculture, transport networks and infrastructures, tourism) have brought radical changes in Greek landscapes. Traditional urban and rural areas have been deeply transformed by thousands of legal or illegal constructions. New public works – especially transport infrastructures – have a great impact on the large-scale physical environment.

The weight of recent change in Greek landscape lies chiefly in the quality of the outcome, and can be judged in the light of what sort of balance it strikes between economic and aesthetic considerations. What we usually call landscape deterioration, abuse, even destruction, expresses transmutation towards an imbalance that may result from rapid changes which fail to provide the necessary leeway for the ecosystem to adapt adequately. The post-war era in the Mediterranean and Greece may be regarded as such a time of precipitous change and consequent imbalance of the overall spatial/ecological system. The result is equally visible in urban and rural landscapes, where contrasts become more glaring. It is not accidental that this situation is often likened to an "indecent assault" or "rape" perpetrated on Greek nature.

Equally disturbing are the buildings and advertising constructions which form large unified "fronts" or "thickets" (actual "billboard habitats") alongside motorways and major automobile routes which "clutter" the Greek countryside with undesirable "furniture" and useless "objects". Let it be noted that it is not always major assaults or interventions of large scale projects that prove harmful. The slow but steady accretion of smaller alterations on coasts, plains and mountains may ultimately bring about greater damage and spoilage, having an unexpected impact on the character of roads, traditional settlements or generally extensive rural areas.

A rich diversity

Greek landscape constitutes an integral part of the natural and cultural heritage of Greece. In fact, due to Greece's long history it has become recognised that the country has a rich landscape diversity which is the result of the interaction between nature and society (traditional patterns of land use and management) and therefore there is a great need to incorporate it into the national strategy of spatial development. Although landscape protection appears as one of the most interesting and important topics of contemporary planning, in Greece, the significance of "landscape" as a policy-relevant issue has not yet been recognised by environmental and spatial policy makers at local, regional and national levels.

Many say that landscape protection in Greece at present is tantamount to the declaration of a war against ugliness whatever its form. But this must not be construed as a war conducted through prohibitions, but rather as a struggle to see sensitivity prevail along with the prudent management of space and the environment through appropriate regulations. Given the inchoate situation of landscape policy in Greece, some specific initiatives are required to open up the way ahead, by effecting the first steps towards establishing a policy: the elaboration of a charter for Greek landscape whose symbolic value is extremely valuable; the integrated and substantial implementation of the European Landscape Convention; the establishment of a mechanism for monitoring landscape such as an observatory.

The protection and sustainable management of landscape in modern Greece is no luxury. The country is currently facing problems of quality, brought to bear by economic developmental evolution itself. However, contemporary circumstances seem propitious for the promotion of a cohesive and comprehensive landscape policy in Greece. Therefore, the time is ripe to co-ordinate existing isolated efforts and to unite all the fragmentary initiatives currently under way that had until now proved incapable of creating the so-called "critical mass" required for success. The impetus powering developments in the landscape situation of Greece must not be left to its fate, but must be given conscious and active support, in order to produce tangible results.

Elias Beriatos
Department of Spatial Planning and Regional Development
University of Thessaly
GR-38334Volos
beriatos@otenet.gr

E. Beriatos

No comment

Architecture and insular landscape

That houses have always been built here is a fact. Nowadays, however, not only "other" houses are built, but their social, economic and functional meaning has considerably changed. It is an urban revolution that, as a result, radically transforms its landscape. For example:

- houses are different. They appear everywhere as volumes "of a new spherical nature";
- beaches and fields appear full of "inverted pyramids resting on their apex", on which a group of apartments, or a wrecked-car dump, land;
- and lastly, a wicked angel goes by, slightly breaking everything. The resulting place looks like a map in the hands of a kid who, in full pictorial inspiration, handles his colour pencils, some of them blunt.

Spheres, pyramids and colourful lines are already part of the insular landscape, and that is why, "to plan the territory", one will have to "find the way to put disorder in order, without losing sight of the map". In such a situation, shouldn't we replace the textbook?

If we pay attention to the tangible demonstrations that nature and culture have imprinted on each landscape, any observer may appreciate the wise adaptation to the environment that builders have achieved all through the centuries: integrated uses, spatial adaptability, social interaction, renewable energies, water-cycle management, economy of materials, exploitation of waste, aesthetical identification – a heritage almost ignored by the methods of production and consumption of the last fifty years.

Luckily, in its search for suitable tools to solve the environmental, political and ethical problems the paradigm of sustainable development carries with it, this know-how from the past begins to be again discovered and incorporated into ecological planning.

The evaluation, up-dating, re-interpretation and finally the use of such knowledge is the best way to perpetuate it.

J-M. Aceytuno
Director of Gabinete PRAC
Numancia, 3
E-35010 Las Palmas de Gran Canaria
jmaceytuno@arquired.es

COUNCIL OF EUROPE

National Agencies and Focal Po

Albania
Environmental Protection and Preservation Committee
Ministry of Health and Environmental Protection
Rruga "Bajram Curri"
AL-TIRANA
Fax: 355-42 652 29
Email: cep@cep.tirana.al

Andorra
Mme Natalia ROVIRA
Ministeri de Medi Ambient
EDF del Govern
c/Prat de la Creu 62-64
AND-ANDORRA LA VELLA
Fax: 376869 833
Email: mediambient@andorra.ad

Armenia
To be designated

Austria
Mr Michael KHÜN
Verbindungsstelle der Bundesländer beim Amt der Niederösterreichischen Landesregierung
Schenkenstrasse 4
A-1014 WIEN
Fax: 43-1 535 60 79
Email: post@vst.gv.at

Azerbaijan
To be designated

Belgium
Flemish region:
De Heer Koen DE SMET
AMINAL-Afd. Natuur
Graaf de Ferraris-gebouw
Kon. Albert II-laan 20 - Bus 8
B-1000 BRUSSEL
Fax: 32-2 553 76 85
Email: Koen.DeSmet@lin.vlaanderen.be

Walloon region:
Mr Jacques STEIN
Ministère de la Région Wallonne
DGRNE – Direction de la Nature
Avenue Prince de Liège 15
B-5100 JAMBES (Namur)
Fax: 32-81 33 58 22
Email: j.stein@mrw.wallonie.be

Brussels region:
Mme NAULAERS
Institut bruxellois pour la gestion de l'environnement
Gulledelle 100
B-1200 BRUXELLES
Fax: 32-2 775 7621

Bosnia and Herzegovina
To be designated

Bulgaria
Mrs Elizaveta MATVEEVA
Vitosha Park
Ministry of Environment and Water
22 Bul. Maria Luiza
BG-1000 SOFIA
Fax: 359-2 988 56 76
Email: lmatv@bol.bg

Croatia
Ministry for Environment and Physical Planning
Republica Austrija 20
HR-10000 ZAGREB
Fax: 385-1 537 203
Email: duzo@ring.net

Cyprus
Mr Antonis L. ANTONIOU
Environmental Service
Ministry of Agriculture, Natural Resources and Environment
CY-1411 NICOSIA
Fax: 357-2 77 49 45

Czech Republic
Dr Bohumil KUČERA
Agency for Nature and Landscape Conservation
4-6 Kališnická
CZ-130 23 PRAGUE 3
Fax: 422-697 2423
Email: kucera@nature.cz

Denmark
Ms Lotte BARFOD
National Forest and Nature Agency
Ministry of the Environment
Haraldsgade 53
DK-2100 COPENHAGEN Ø
Fax: 45-39 27 98 99
Email: lot@sns.dk

Estonia
Mr Kalju KUKK
Ministry of the Environment
24 Toompuiestee
EE-0100 TALLINN
Fax: 372-62 62 801
Email: kalju@ekm.envir.ee

Finland
Ms Anne BRAX
Ministry of the Environment
P O Box 35
FIN-00023 HELSINKI
Fax: 358-9 160 39323

France
Mme Marie-Aurore MALNOURY
Direction de la Nature et des Paysages
Ministère de l'Ecologie et du Développement durable
20 avenue de Ségur
F-75302 PARIS 07 SP
Fax: 33-1 42 19 25 77
Email: marie-aurore.malnoury@environnement.gouv.fr

Georgia
Mme Maka TSERETELI
Environmental Policy Department
Ministry of the Environment and Natural Resources Protection
68a Kostava St.
380015 TBILISI
Fax: 995-32 333 952
Email: gmep@access.sanet.ge

Germany
Mrs Helga INDEN-HEINRICH
Deutscher Naturschutzring eV
Am Michaelshof 8-10
D-53177 BONN
Fax: 49-228 35 90 96
Email: dnr-inden-heinrich@t-online.de

Greece
Mr Donald MATTHEWS
Hellenic Society for Nature Protection
24 Nikis Street
GR-105 57 ATHENS
Fax: 30-1 32 25 285
Email: hspn@hol.gr

Hungary
Mrs Louise LAKOS
Department of European Integration and International Relations
Ministry for Environment and Regional Policy
P O Box 351
H-1394 BUDAPEST
Fax: 36-1 201 28 46
Email: lakosne@mail.ktm.hu

Iceland
Mr Sigurdur Á. THRÁINSSON
Ministry for the Environment
Vonarstraeti 4
ISL-150 REYKJAVIK
Fax: 354-562 42 80
Email: sigurdur.thrainsson@umh.stjr.is

Ireland
Education and Marketing Officer
Centre Naturopa National Agency
Dúchas The Heritage Service
Department of Arts, Heritage and the Gaeltacht
6 Ely Place Upper
IRL-DUBLIN 2
Fax: 353-1 66 16 764
Email: visits@indigo.ie

Italy
Gian Luigi FERRETI
Ministry of Agricultural Policy and Forestry
Via XX Settembre, 20
00187 ROME
Fax: 06 46 65 30 90
Email: g.ferretti@politicheagricole.it

Latvia
Skaidrite RUSKULE
Nature History Museum
K. Barona 4
LV-1050 RIGA
Fax: +371 7220092
Email: skaidrite.ruskule@dabasmuzejs.gov.lv

Liechtenstein
Mr Alexander HAURI
Liechtensteinische Gesellschaft für Umweltschutz
Im Bretscha 2
FL-9494 SCHAAN
Fax: +423 232 52 63
Email: lgu@lgu.lol.li

Lithuania
Dr Danielius PIVORIUNAS
Land Use Planning Department
Landscape Division
Ministry of Environment
Jaksto g-ve 4/9
LT-2694 VILNIUS
Fax: 370 2 22 08 47
Email: d.pivoriunas@aplinkuma.lt

Luxembourg
M. Jean-Paul FELTGEN
Ministère de l'Environnement
18 Montée de la Pétrusse
L-2918 LUXEMBOURG
Fax: 352-478 6835
Email: jean-paul.feltgen@mev.etat.lu

Malta
Mr John GRECH
Ministry for the Environment
M-FLORIANA
Fax: 356-23 99 05

Moldova
Mr Alecu RENITSA
Ecological Movement of Moldova
Republican Periodical Publication Nature
13 S. Lazo Str.
2004 CHISINAU
Fax: 373-2 23 71 57
Email: renitsa@eco.moldnet.md
and
Mr Grigore BARAC
Mediu Ambiant
Ministry of Ecology, Construction and Territorial Development
MD 2005 CHISINAU
Fax: 373-2 23 71 57

Netherlands
Drs Peter W. BOS
Ministry of Agriculture, Nature Conservation and Fisheries
Division for International Nature Management Affairs
P O Box 20401
NL-2500 EK's GRAVENHAGE
Fax: 31-70 378 6146
Email: p.w.bos@n.agro.nl

Norway
Ms Sylvi OFSTAD SAMSTAG
Ministry of Environment
Myntgaten 2
P O Box 8013 DEP
N-0030 OSLO
Fax: 47-22 24 95 60
Email: sylvi.ofstad@md.dep.no

Poland
Mr Marcin HERBST
National Foundation for Environmental Protection
Ciołka 13 (I.p)
PL-01 445 WARSCHAU
Fax: 48-22 656 6542
Email: mherbst@okids.waw.pl

Portugal
Prof. Helena FREITAS
Liga para a Protecção da Natureza
Estrada do Calhariz de Benfica 187
P-1500-124 LISBOA
Fax: 351-21 778 3208
Email: lpn.natureza@mail.telepac.pt

Romania
Mrs Adriana BAZ
Directorate of Nature and Biological Diversity Conservation
Ministry of Waters, Forestry and Environmental Protection
Bd Libertatii 12, Sector 5
RO-70542 BUCURESTI
Fax: 40-1 41 00 282
Email: biodiv@mappm.ro

Russian Federation
International Relations Department
Ministry of Natural Resources
B. Grusinskaya str. 4/6
123812 MOSKAU
Fax: 7-095 943 0013/951 7061
Email: dony@mnr.gov.ru

San Marino
Mr Paolo RONDELLI
Dipartimento Territorio Ambiente ed Agricultura,
Contrada Omerelli 43
RSM-47890 SAN MARINO
Fax: 378-0549 883600
Email: ronpao@iol.it
or rondelli.paolo@libero.it

ints of the Naturopa Network

Serbia and Montenegro
To be nominated

Slovakia
Ms Jana ZACHAROVA
Department of Nature and Landscape Protection
Ministry of the Environment
Nám. L. Štúra 1
SK-812 35 BRATISLAVA
Fax: 421-7 5956 20 31
Email: zacharova.jana@enviro.gov.sk

Slovenia
Ms Helena VODUSEK
Ministry of Environment and Spatial Planning
Dunajska cesta 48
SI-1000 LJUBLJANA
Fax: 386-61 178 7424
Email: helena.vodusek@gov.si

Spain
M^me Carmen CASAL FORNOS
Ministerio de Medio Ambiente
Secretaría General Técnica
Centro de Documentación ambiental
Despacho BS 09
Plaza San Juan de la Cruz s/n
E-28071 MADRID
Email: carmen.casal@mma.es

Sweden
Mrs Mona N'DURE
Terrestrial Environment Section
Swedish Environmental Protection Agency
Blekholmsterassen 36
S-106 48 STOCKHOLM
Email: mona.ndure@naturvardsverket.se

Switzerland
M^me Marie GARNIER
Pro Natura
Wartenbergstrasse 22
CH-4052 BÂLE
Fax: 41-61 317 91 66
Email: marie.garnier@pronatura.ch

"The former Yugoslav Republic of Macedonia"
Mr Aleksandar NASTOV
Office of the National Agency "Naturopa"
Ministry of Environment
Dresdenska Street 52
MK-91 000 SKOPJE
Fax: 389-91 366 931
Email: infoeko@moe.gov.mk

Turkey
Dr Osman TAŞKIN
Turkish Association for the Conservation of Nature and Natural Resources
Menekse sokak 29/4
TR-06440 KIZILAY-ANKARA
Fax: 90-312 417 95 52
Email: ttkd.der@superonline.com

Ukraine
Dr Tetiana HARDASHUK
Green Ukraine
National Ecological Centre
P O Box 89/7, 39 Predslavynska St
252150 KYIV
Fax: 38-044 269 9925

United Kingdom
Mr John ANGELL
Department for Environment, Food and Rural Affairs
Kite Zone 1/10
Temple Quay House
2 The Square
Temple Quay
GB-BRISTOL BS1 6EB
Fax: 44-117 372 8182
Email: john.angell@defra.gsi.gov.uk

Focal Points

Albania
M^me Arlinda KONDI
Cultural Heritage Department
Ministry of Culture, Youth and Sports
Boul. "Deshoret e Kombit" No. 1
AL-TIRANA
Fax +355 4 22 82 63
E.mail: dtkult@mkrs.gov.al

Belgium
M. Edgard GOEDLEVEN
Afdeling Monumenten en Landschappen
Ministerie van de Vlaamse Gemeenschap
Koning Albert II-laan 20
B-1000 BRUSSEL
Fax +32 2 553 80 95
Email: edgard.goedleven@lin.vlaanderen.be

M^me Jocelyne BALLENS
Division de l'aménagement et de l'urbanisme
DGATLP-MRW
Rue des Brigades d'Irlande 1
B-5100 NAMUR
Email: j.ballens@mrw.wallonie.be

Cyprus
M. Michael KYRIAKIDES
Town Planning Officer
Ministry of Interior
Department of Town Planning and Housing
Severis Avenue
1454 NICOSIA
Fax +357 22 677570
Email: tphnic21@cytanet.com.cy

Czech Republic
M. Petr LEPEŠKA
Staromestske namesti 6
CZ-110 15 PRAHA 1
Fax +420 2 575 323 27
Email: petr.lepeska@mmr.cz

France
M^me Orane PROISY
Bureau des actions européennes et internationales
Direction de l'architecture et du patrimoine
8, rue Vivienne
F-75002 PARIS
Fax +33 1 40 15 33 07
Email: orane.proisy@culture.gouv.fr

Hungary
M^me Gabriella SZABO-PAP
Wesselényi utca 20-22
H-1077 BUDAPEST
Fax +36 361 484 7118
Email: gabriella.szabopap@nkom.gov.hu

Latvia
M. J. DAMBIS
Head of inspection
Ministry of Culture
19 M.Plis st
LV-1050 RIGA
Fax +371 7228808
Email: vkpai@latnet.lv

Portugal
Centro de cultura
Rua Antonio Maria Cardoso 68
P-1249-101 LISBOA
Fax +351 213 428 250
Email: info@cnc.pt

Romania
Ms Ana BARCA
Inspecteur des monuments
Département des Monuments Historiques
Ministère de la Culture
Piata Presel Libere ar. 1 - Secteur 1
RO-71341 BUCAREST
Fax +40 1 224 28 89

M. Serban NADEJDE
Chef de la Section «Aménagement du territoire»
Institut National Urbanproiect
53-55 Rue Nicolae Filipescu - Secteur 2
RO-BUCAREST
Fax +40 1 211 49 06
Email: office@incdurban.ro

Russian Federation
M. Alexander FROLOV
Head of Central Board of Architecture and Urban Development
Government of Moscow Region
Stoleshnikov Lane 7
103031 MOSCOW
Fax +7 095 229 2393
Email: cemat@go.ru

Slovakia
M. Jaroslav LIPTAY
Senior Adviser
Ministry of Culture
Nam SNP 33
813 31 BRATISLAVA
Fax +421 2 593 914 04
Email: jarosla_liptay@culture.gov.sk

Spain
M^me Margarita ORTEGA
Chef de Division
Unité de développement territorial
Ministère de l'environnement
Plaza de San Juan de la Cruz, s/n
E-28071 MADRID
Fax +34 91 597 59 71
Email: margarita.ortega@seac.mma.es

Switzerland
M. Armand MONNEY
Délégué aux affaires internationales
Office fédéral du développement territorial
Palais fédéral Nord
Kochergasse 10
CH-3003 BERNE
Fax +41 31 322 53 46
Email: armand.money@are.admin.ch

CORRESPONDENTS

Belarus
Mr Vladimir F. LOGINOV
Institute for Nature Resources Exploitation and Ecology
Staroborysovkyi trakt 10
220023 MINSK
Fax: 375-172 64 24 13

Israel
International Affairs
Ministry of the Environment
P O Box 34033
95464 JERUSALEM
Fax: 972-2 653 5934

Monaco
M. Patrick VAN KLAVEREN
Conseiller technique du Ministre Plénipotentiaire chargé de la Coopération Internationale pour l'Environnement et le Développement
Villa Girasole
16 boulevard de Suisse
MC-98000 MONACO
Fax: 377-93 50 95 91
Email: pvanklaveren@gouv.mc

Focal points

Monaco
Direction des Affaires Culturelles
4 Bd des Moulins
MC-98000 MONACO
Fax +377 93 50 66 94

USA
US Fish and Wildlife Service
Department of the Interior
WASHINGTON DC 20240
Fax: 1-703 358 2849

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Council of Europe
Directorate of Culture and Cultural and
Natural Heritage
Regional Planning and Landscape Division
F-67075 Strasbourg cedex
Fax: 33-(0)3 33 41 37 51
Email: christian.meyer@coe.int
Web: http://www.coe.int

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