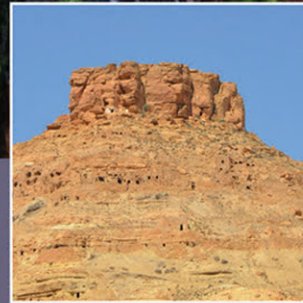


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Emmanuel Reynard and José Brilha



Geoheritage

Assessment, Protection, and Management

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Edited by

Emmanuel Reynard

University of Lausanne, Lausanne, Switzerland

José Brilha

University of Minho, Braga, Portugal



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Radarweg 29, PO Box 211, 1000 AE Amsterdam, Netherlands
The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, United Kingdom
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Main photograph:

Part of a coastal flysch succession (turbidites) in a geosite of high international scientific value. The whole stratigraphic succession shows a complete and continuous record of more than 5,000 m and 50 Ma including the Cretaceous/Paleogene (K-Pg) and the Palaeocene/Eocene boundaries. The geosite also includes the official GSSP for two Palaeocene stages boundaries (Danian-Selandian and Selandian-Thanetian).

Zumaia, Basque Coast UNESCO Global Geopark
Autonomous Community of the Basque Country in northern Spain
Photograph by J. Brilha

Lower left:

The weathering and erosional features of the middle to upper Miocene calcareous sandstones and marls explain why Chahkuh gorge is a scenic destination. This gorge is one of the most popular geosites of Qeshm Island UNESCO Global Geopark, located in the largest island of the Persian Gulf.

Qeshm Island, Islamic Republic of Iran
Photograph by J. Brilha

Lower central:

The first fossils on Dinosaur Ridge were found in 1877. Here, some Cretaceous fossil sites are managed in order to conserve dinosaur footprints and to allow educational and recreational activities. It has been designated by the National Park Service as a National Natural Landmark (1973), by the state of Colorado as a State Natural Area (2001) and by the Colorado Geological Survey as a Point of Geological Interest (2006).

Jefferson County, Morrison, Colorado, USA
Photograph by J. Brilha

Lower right:

Cuesta landscape of Guermeza, Southeast Tunisia is typical of geoheritage closely interacting with cultural heritage. Cave dwellings were dug laterally in alternations of limestone, clay, marl and dolomite strata that appear on witness buttes (here) and outliers slopes of a cuesta system.

Photograph by E. Reynard

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List of Contributors

Asfawossen Asrat

Addis Ababa University, Addis Ababa, Ethiopia

José Brilha

University of Minho, Braga, Portugal

Viola M. Bruschi

University of Cantabria, Santander, Spain

Cynthia V. Burek

University of Chester, Chester, United Kingdom

Luis Carcavilla

Geological Survey of Spain, Madrid, Spain

Paul Carrión

Technical University of Litoral, Guayaquil, Ecuador

Nathalie Cayla

University Savoie Mont Blanc, Le Bourget-du-Lac, France

Michael Comfort

Department of Primary Industries, Parks, Water and Environment, Hobart, TAS, Australia

Paola Coratza

University of Modena and Reggio Emilia, Modena, Italy

Roger Crofts

IUCN-WCPA Emeritus, Edinburgh, United Kingdom

Patrick De Wever

National Museum of Natural History, Paris, France

Enrique Díaz-Martínez

Geological Survey of Spain, Madrid, Spain

Andrés Díez-Herrero

Geological Survey of Spain, Madrid, Spain

Ross Dowling

Edith Cowan University, Perth, WA, Australia

Lesley Dunlop

Northumbria University, Newcastle upon Tyne, United Kingdom

Stanley C. Finney

California State University at Long Beach, Long Beach, CA, United States

Ángel García-Cortés

Geological Survey of Spain, Madrid, Spain

Marco Giardino

University of Turin, Turin, Italy

Christian Giusti

University of Paris-Sorbonne, Paris, France

Miguel Gómez-Heras

Autonomous University of Madrid, Madrid, Spain

John E. Gordon

University of St Andrews, St Andrews, United Kingdom

Murray Gray

Queen Mary University of London, London, United Kingdom

Gilson B. Guimarães

State University of Ponta Grossa, Paraná, Brazil

Michel Guiraud

National Museum of Natural History, Paris, France

Asier Hilario

Basque Coast UNESCO Global Geopark, Deba, Spain

Fabien Hobléa

University Savoie Mont Blanc, Le Bourget-du-Lac, France

Lyoum Kim

Cave Research Institute of Korea, Chuncheon, South Korea

Jonathan G. Larwood

Natural England, Peterborough, United Kingdom

Flavia F. de Lima

Geodiversity Geological Solutions Ltd, Curitiba, Brazil

John Macadam

Earthwords, Bodmin, United Kingdom

Simon Martin

Bureau d'étude Relief, Aigle, Switzerland

Josep Mata-Perelló

Technical University of Catalonia, Manresa, Spain

Peter McIntosh

Forest Practices Authority, Hobart, TAS, Australia

Herbert W. Meyer

Florissant Fossil Beds National Monument, Florissant, CO, United States

Piotr Migoń

University of Wrocław, Wrocław, Poland

Jorge Molina

National University of Colombia, Bogotá, Colombia

Alicja Najwer

Adam Mickiewicz University in Poznań, Poznań, Poland

David Newsome

Murdoch University, Perth, WA, Australia

Kevin N. Page

Plymouth University, Plymouth, United Kingdom

Colin D. Prosser

Natural England, Peterborough, United Kingdom

Emmanuel Reynard

University of Lausanne, Lausanne, Switzerland

Antonio C. Rocha-Campos

University of São Paulo, São Paulo, Brazil

Chris Sharples

University of Tasmania, Hobart, TAS, Australia

Juana Vegas

Geological Survey of Spain, Madrid, Spain

Roberto Villas-Boas

Centre for Mineral Technology, Rio de Janeiro, Brazil

Kyung S. Woo

Kangwon National University, Chuncheon, South Korea

Zbigniew Zwoliński

Adam Mickiewicz University in Poznań, Poznań, Poland

Biographies

Asfawossen Asrat is a geologist and Professor of Geology at the Addis Ababa University (Ethiopia). He has served as the Vice President of the Geological Society of Africa (2008–16), and is currently serving as a member of the UNESCO Global Geoparks Council, as an Associate Editor of the journal *Quaternary International*, and as an Editorial Board member of the journals *Geoheritage* and *Annals of Geomorphology*. He develops research on the geoheritage and geotourism potential of Ethiopia and applied research on geodiversity and geoconservation.

José Brilha is a geologist and Professor at the University of Minho (Portugal). He is President of ProGEO (The European Association for the Conservation of the Geological Heritage), member of the UNESCO Global Geopark Evaluation Team and the IUCN World Commission on Protected Areas and its Geoheritage Specialist Group. He was founder and Editor-in-Chief of the journal *Geoheritage*, member of the Geoheritage Task Group of IUGS, of the Portuguese Committee for IGCP and of the Portuguese Geoparks Forum. Currently, he develops applied research on geodiversity, geoconservation, and geoparks.

Viola Maria Bruschi is a geologist and Lecturer in Geology and Geomorphology at the University of Cantabria (Spain). She has been a member of the Geological Heritage Commission of Spain since 2015. In 2007, she concluded her PhD thesis on the characterisation, assessment and management of geodiversity. She develops research on geological heritage (inventories, assessment and protection), geomorphological processes, geological risks, archaeological heritage and geomorphological mapping.

Cynthia V. Burek is a geologist and science communicator conservationist, as well as Professor at the University of Chester (United Kingdom) and Deputy Director of the Centre for Science Communication. She is Director of GeoMôn UNESCO Global Geopark in Wales, as well as a committee member of the English Geodiversity Forum, Deputy Chair of Cheshire RIGS, and Past Chair of NEWRIGS (North East Wales Regionally Important Geodiversity Sites). Her main research topics are history of geoconservation, geoconservation in geoparks, teaching geoconservation on land and in the marine area, raising public awareness of geoconservation and geotourism through town trails, and geoconservation of limestone pavement habitats. She is an active communicator on geodiversity, geotourism and geoconservation, Quaternary geoconservation, the role of women in history of geoconservation, and geoconservation of saltscapes areas.

Paul Carrión is a geologist engineer and Professor at the Technical University of Litoral (Ecuador). He is Director of the Centre for Applied Research in Earth Sciences (CIPAT-ESPOL). Currently, he develops applied research and projects on geodiversity, geoconservation, water management, hydrogeology and environment.

Nathalie Cayla is a geologist at the University Savoie Mont Blanc (France). She is a member of the Scientific committees of the Bauges and the Chablais UNESCO Global Geoparks and of the Geomorphosite Heritage Commission of the French National Committee for Geography (CNFG). She develops research on geotourism and new technologies applied to geoheritage management.

Luis Carcavilla is a geologist and full researcher of the Geological Survey of Spain (IGME). He is the Secretary of the National Committee of Spanish Geoparks and a member of the scientific committee of three geoparks. He is the author of 11 books of geology and geoconservation and develops projects about geoconservation, geological heritage and popular science.

Michael Comfort is a geomorphologist and Section Leader of the Geoconservation Section at the Tasmanian Department of Primary Industries Parks Water and Environment in Australia. The Section's main area of focus is in providing geoconservation advice and conducting research within the Tasmanian Wilderness World Heritage Area and other reserved lands in Tasmania including the Macquarie Island World Heritage Area. He is also responsible for the Tasmanian Geoconservation Database.

Paola Coratza is a geologist and Researcher in Physical Geography and Geomorphology at the Department of Chemical and Geological Sciences of the University of Modena and Reggio Emilia (Italy). Since 2013 she has been chairman of the Working Group on Geomorphosites of the International Association of Geomorphologists (IAG). Her research activity is mainly focused on assessment, mapping and enhancement of geomorphological heritage.

Roger Crofts is a geographer, working as a coastal and applied geomorphologist, before joining the UK Civil Service as an advisor, and later, a policy administrator. He was founder CEO Scottish Natural Heritage from 1992 to 2002, IUCN/WCPA Europe Chair from 2000 to 2008. He is IUCN/WCPA Geoheritage Specialist Group Deputy Chair and Honorary Professor of Geography at Dundee and Edinburgh Universities. He is writing and advising on environmental policy, land stewardship and geoheritage conservation in Scotland, Iceland and around Europe.

Patrick De Wever is a geologist and Professor at the National Museum of Natural History, Paris (France). He is Chairman of the Heritage Sites and Collections Subcommittee of IUGS, a member of the Geoheritage Specialist Group of WCPA/IUCN, a member of the French IUCN commission for World Heritage, IUGS evaluator of UNESCO Global Geoparks, member of ProGEO, coordinator of the National inventory of geoheritage for France, and editor of book collections presenting stratotypes. Currently, he is involved in outreaching geology through conferences and books.

Enrique Díaz-Martínez is a senior geologist and researcher at the Geological Survey of Spain (IGME). He is the Spanish representative and Vice President of ProGEO (The European Association for the Conservation of the Geological Heritage), an expert member of WCPA/IUCN and Deputy Chair of its Geoheritage Specialist Group since its inception, and an evaluator of UNESCO Global Geoparks and World Heritage sites. He has been President of the Geoheritage

Commission of the Geological Society of Spain since 2008, and was a member of the Geoheritage Task Group of IUGS. Currently, he develops applied research on geoheritage and geoconservation for the Spanish government, and particularly for international cooperation with Africa and Latin America.

Andrés Díez-Herrero is a geologist and a Researcher at the Geological Survey of Spain, working on geoheritage since the 1980s, when he published one of the earliest geosite inventories in Spain (Segovia's province). He is author of several publications on geoheritage inventory, assessment, legal protection, and uses proposal (geotourism, dissemination using ICT). Currently, he is a member of the Advisory Committee of the UNESCO Biosphere Reserve of San Ildefonso-El Espinar (Spain) and participates in several projects on geosite monitoring and management, and social participation in geoconservation ('Save a Geosite', www.apadrinaunaroca.es).

Ross Dowling is a geomorphologist and Foundation Professor of Tourism at the Edith Cowan University (Australia). He is a UNESCO Geotourism Advisor, was a Foundation Advisory Committee member of the Asia Pacific Geoparks Network, and is a member of the Geotourism Standing Committee of the Geological Society of Australia. He is the Convenor of the Global Geotourism Conferences. His research focuses on the global development of geotourism and geoparks.

Lesley Dunlop is a geologist based at Northumbria University (United Kingdom). She is Chair of the English Geodiversity Forum and GeoConservationUK, serves the Geoconservation Committee of the Geological Society of London and is a member of ProGEO (The European Association for the Conservation of the Geological Heritage). She is a fellow of the Geological Society. Current research interests include use of geophysical techniques to examine processes relating to periglacial geomorphology and evaluating and enhancing Local Geological Sites in the United Kingdom.

Stanley C. Finney is Professor of Geological Sciences at California State University at Long Beach (United States). He is Secretary General of the International Union of Geological Sciences and previously served as Chair of the International Commission on Stratigraphy and its Subcommittee on Ordovician Stratigraphy. He is a stratigraphic palaeontologist with research on Ordovician graptolites, the Late Ordovician mass extinction, the palaeogeographic and geotectonic history of the Argentina Precordillera, and the stratigraphy and structure of the Roberts Mountains allochthon of north-central Nevada.

Ángel García-Cortés has a PhD in mining engineering from the Universidad Politécnica de Madrid (Spain). Since 1981 he has worked at the Geological Survey of Spain (IGME), where he has been Director of Geology and Geophysics, Director of Mineral Resources and Environment and Head of the Division of Geological and Mining Heritage. For 15 years, he has been coordinating the development of methodologies for geoheritage inventorying, the Spanish Geoheritage Inventory and the Global Geosites Project in Spain. Since 2015, he has been President of the Spanish National Geoparks Committee.

Marco Giardino is Associate Professor of Physical Geography and Geomorphology at the University of Turin (Italy). He is Co-Chair of the International Association of Geomorphologists

(IAG) Working Group on Landform Assessment for Geodiversity. He is also a member of the Italian Glaciological Committee, the Italian AIGEO association and coordinator of the Scientific Committee of the Sesia Val Grande UNESCO Global Geopark. He studies mountain geomorphology and particularly landforms geodiversity and geoheritage of the Alps, by applying innovative technologies for the collection and dissemination of scientific data.

Christian Giusti is a geomorphologist and Professor of Physical Geography at the University of Paris-Sorbonne (France), a member of the CNRS Research Team 8185 'Espace, Nature & Culture' since 2012, of the IUCN French Committee in charge of the World Heritage aesthetic criterion (vii) since 2014, and a regular reviewer for the journal *Geoheritage*. He develops research on structural and long-term geomorphology, on history and epistemology of geomorphology, on geomorphosites and geodiversity, and more recently on landscape studies and urban geomorphology.

Miguel Gomez-Heras is a geologist and a Lecturer at the Autonomous University of Madrid (Spain). He has over 15 years of research experience in rock weathering processes, in cultural and geological heritage with particular focus on thermal weathering and non-destructive testing for monitoring weathering. Over the years he has carried out field-based research in numerous listed buildings and protected natural landscapes in Egypt, Hungary, Jordan, Mexico, Morocco, Spain and the United Kingdom, which led to over 80 publications in the area of rock weathering and stone decay.

John Gordon is a geomorphologist and an Honorary Professor in the School of Geography and Sustainable Development at the University of St Andrews (Scotland). He has worked in geoconservation for many years and is Deputy Chair of the Geoheritage Specialist Group of the International Union for the Conservation of Nature/World Commission on Protected Areas (IUCN/WCPA), a member of the European Federation of Geologists' Panel of Experts on Geoheritage and a member of ProGEO. He has research interests in geodiversity, geoconservation, geotourism and mountain geomorphology.

Murray Gray is a Emeritus Reader at Queen Mary University of London (United Kingdom) and visiting professor at the University of Minho (Portugal). Born and educated in Edinburgh, Scotland, he originally trained as a glacial geomorphologist but since the 1990s has concentrated on research and writing on geodiversity and geoconservation, including his book *Geodiversity: Valuing and Conserving Abiotic Nature* (2nd ed., Wiley Blackwell, 2013). He is a member of the ProGEO, the Geoheritage Specialist Group of WCPA/IUCN, and the English Geodiversity Forum (EGF). He has lectured in the United States, Canada, Japan, China, Hong Kong, Malaysia, South Africa, Brazil and numerous European countries.

Gilson Burigo Guimarães is a geologist and an Associate Professor at the Department of Geosciences, State University of Ponta Grossa (Paraná, Brazil). His research areas include characterisation, valuing and promotion of geodiversity through geoconservation actions, non-carbonate rocks speleology, petrology and regional geology.

Michel Guiraud is a mineralogist and Professor at the National Museum of Natural History, Paris (France). He is Director General for collections at the Museum. He is the representative of the Museum in several French, European and International committees on museums and on natural history collections. He is currently active in research infrastructures.

Asier Hilario is a geologist and Scientific Director of the Basque Coast UNESCO Global Geopark. He is a coordinator of the Spanish Geoparks Forum and integrates the group of evaluators for UNESCO Global Geoparks, and is a member of the Geoheritage Specialist Group of WCPA/IUCN. He has broad experience in the management, evaluation and dissemination of geological heritage with special emphasis on TV documentaries that have been awarded internationally.

Fabien Hobléa is a geomorphologist and Associate Professor of Environmental Geography at the University Savoie Mont Blanc (France). He is President of the Geomorphological Heritage Commission of the French National Committee of Geography. Since 2013 he has been Co-Chair of the Working Group on Geomorphosites of the International Association of Geomorphologists (IAG). His research focuses on geomorphological heritage and water management in mountain and karst areas, including participatory approaches.

Lyoun Kim is a cave geologist and the Vice-Director of the Cave Research Institute of Korea. He has been working on cave management and monitoring of showcaves as well as on geoheritage evaluation of natural caves in Korea. He has explored and investigated numerous natural caves in Korea and published more than 30 scientific reports and 20 international papers about limestone caves.

Jonathan G. Larwood is a geologist and a Senior Specialist in geology and palaeontology at Natural England. His main activities include provision of geoconservation advice with a particular expertise in geosite and fossil collecting management for World Heritage, Global Geoparks, and the voluntary geoconservation sector. His main research interests include geoconservation.

Flavia Fernanda de Lima is a geologist with a master's degree in geological heritage and geoconservation. She is a manager of Geodiversity Geological Solutions Ltd. She has technical expertise in management plans for protected areas, speleological studies, geopark projects and geoconservation studies.

John Macadam is a geologist, science communicator and consultant. He has worked as a petroleum geologist, taught geology, science and the environment to all ages from primary to post-graduate, and his consultancy clients include geoparks, government bodies, the BBC and industry. He was trained in interpretation by the US National Park Service (on a Royal Society/British Association award) and has produced much innovative interpretation for the public under his 'Earthwords' banner, as well as giving keynotes and workshops in many countries on communicating geoheritage. He was awarded the Halstead Medal by the UK's Geologists' Association and is an Honorary Associate at the University of Exeter (United Kingdom).

Simon Martin is a geographer, specialised in methods of geoheritage studies, geo-interpretation and new technologies. He is a member of the Working Group on Geosites of the Swiss Academy of Sciences. As co-founder of the private company Relief, his field of activity stretches from the development of geotourism and geo-interpretation products to the consulting for geoheritage management and promotion at regional scale.

Josep Mata-Perelló is a geologist and Magister Honoris Causa Professor at the Polytechnic University of Catalonia (Spain). He is Honorary President of SEDPGYM (Spain), Chairman of the Scientific Committee of the Central Catalunya UNESCO Global Geopark, consultant for mining issues of the Sobrarbe and the Molina and Alto Tajo UNESCO Global Geoparks (Spain). He is President of SIGMADOT (Spain).

Peter McIntosh is a geologist working as a researcher and advisor with the Forest Practices Authority in Hobart, Tasmania (Australia), where he has the position of Manager, Earth Sciences and Cultural Heritage. He works with foresters to identify, manage and protect geological sites of significance in production forests. He developed a strong interest in geomorphology, Quaternary geology and geoconservation during his research and forestry work in Tasmania and New Zealand. He is currently a member of the committee overseeing the publically accessible Tasmanian Geoconservation Database, which lists all sites of geoconservation interest in Tasmania.

Herbert W. Meyer is the palaeontologist for the US National Park Service at Florissant Fossil Beds National Monument in Colorado (United States). He holds adjunct appointments at University of Colorado and the Denver Museum of Nature & Science. He is the author of *The Fossils of Florissant* and coauthor of *Saved in Time: The Fight to Establish Florissant Fossil Beds National Monument, Colorado*. He is active in efforts to establish an American geopark along the Gold Belt National Scenic Byway and has collaborated in support of geoheritage efforts at petrified forest sites in Peru and Thailand.

Piotr Migon is a geomorphologist with a geographical background and is Professor of Geography at the University of Wrocław (Poland). He was Vice President of the International Association of Geomorphologists (IAG) (2009–13), is currently its Executive Member, and is Series Editor of the *World Geomorphological Landscapes* book series published by Springer. He is involved in geoheritage and geotourism promotion in Poland and elsewhere, co-authored many peer-review papers on this subject and serves as evaluator of World Heritage nominations. His research is mainly focused on granite and sandstone areas.

Jorge Molina is a mining engineer and Full Professor at the National University of Colombia. He is very active in research on geoheritage, geodiversity, geoconservation, mining environment and mining safety.

Alicja Najwer is a geographer and geoinformation specialist. She is an academic lecturer at the Adam Mickiewicz University in Poznań (Poland) and conducts research concerning Geographic Information Systems, geodiversity and thematic maps. She is also a secretary of the International

Association of Geomorphologists (IAG) Working Group on Landform Assessment for Geodiversity. Her research concerns geodiversity assessment methods using GIS.

David Newsome is a recreation ecologist and Associate Professor at Murdoch University, Perth (Australia). He is a member of the IUCN World Commission on Protected Areas and has experience of ecotourism development in south-east Asia. Particular interests include undertaking projects that will aid in the development of sustainable tourism, encourage local communities to maintain environmental quality and enhance the economic value of natural landscapes and geoheritage.

Kevin N. Page is a geologist and specialist in geoheritage, having worked for many years for the state conservation agency English Nature and subsequently chairing the Devon Regionally Important Geological Sites Group in SW England, as well as carrying out geodiversity and landscape surveys for a range of regional and national governmental organisations in the United Kingdom. He is currently Secretary General of the International Commission on Geoheritage of the IUGS and Secretary of its Heritage Sites and Collections Subcommittee, as well as Editor-in-Chief of the journal *Geoheritage*, which is published in collaboration with ProGEO. He is also a specialist in ammonioidea and stratigraphy and Lecturer in Earth Sciences at Plymouth University (England).

Colin D. Prosser is a geologist and the Principal Specialist in Geoconservation at Natural England, the government agency responsible for nature conservation in England. He has almost 30 years' experience of applying legislation, shaping policy and developing practical approaches to geoconservation in real situations on the ground. He is President of the Geologists' Association, a member of the UK Committee on UNESCO Global Geoparks and served on the Geological Society of London's Geoconservation Committee for 20 years. Since 2013, he has been an editor for the journal *Proceedings of the Geologists' Association*, specialising in papers on geodiversity and geoconservation.

Emmanuel Reynard is a geographer and Professor of Physical Geography at the University of Lausanne (Switzerland). He chaired the Working Group on Geomorphosites of the International Association of Geomorphologists (IAG) from 2001 to 2013, and has been president of the Working Group on Geosites of the Swiss Academy of Sciences since 2006. He is a member of the Executive Committee of IAG and Honorary Professor of the University of Bucharest (Romania). He develops research on geomorphological heritage and geotourism, water management in mountain areas and geohistorical studies of landscape changes.

António Carlos Rocha-Campos is a geologist with a PhD in sciences and several postdoctoral researches. He is Full Professor in the Department of Sedimentary and Environmental Geology, Geosciences Institute of the University of São Paulo (Brazil). Consultant of the Brazilian Antarctic Programme, he works mainly with Invertebrate Palaeontology (Mollusca) and Gondwana studies during the Late Paleozoic, especially its glacial record.

Chris Sharples is a geologist who has mainly worked as an independent contractor on studies and management of geomorphic systems over several decades, including several periods working with Tasmanian government land management agencies on the development of approaches to managing geoheritage values in Tasmania. Since 2007 he has also been a Research Associate with the University of Tasmania (Australia). His research interests now focus on the effects of Climate Change on geoheritage, and he is currently investigating the attribution of sea-level rise effects on coastal landforms as a PhD project.

Juana Vegas has a PhD in geology from the Universidad Complutense de Madrid (Spain). Since 2006 she has worked at the Geological Survey of Spain (IGME), where she has a full position in the Geological and Mining Heritage Area. For 20 years, she has been working on geoheritage inventories at different scales and nowadays focuses on the Spanish Inventory of Geosites. One of the main innovations of her research is the development of a methodology for implementation of indicators for geoconservation by monitoring active geological processes within natural protected areas in Spain.

Roberto Villas-Boas (†) was a mining engineer and founder of the Centre of Mineral Technology (CETEM-Brazil). An expert advisor on mining and geodiversity projects around the world, he was a member of the Management Committee of the CYTED Programme for 25 years in the area of Industrial Promotion.

Kyung Sik Woo is a geologist and Professor at the Kangwon National University (South Korea). He is the President of the International Union of Speleology (IUS) and Chair of IUCN/WCPA Geoheritage Specialist Group, and member of the UNESCO Global Geoparks Evaluation Team. He has been working as World Heritage Field Evaluator for IUCN since 2009. He has published over 100 articles in international journals including *Nature* (2014). Currently, he develops research on geoheritage evaluation in protected areas and palaeoclimate studies using speleothems and fossils.

Zbigniew Zwoliński is a geographer, geomorphologist, expert in geoinformation and Professor at the Adam Mickiewicz University in Poznań (Poland). He is Chair of the International Association of Geomorphologists (IAG) Working Group on Landform Assessment for Geodiversity. He is also Editor-in-Chief of the journal *Landform Analysis* and a member of the Committee of Geographical Sciences at the Polish Academy of Sciences. Currently he develops research on geodiversity in different morphoclimatic zones in terms of geoinformation.

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Emmanuel Reynard and José Brilha
Editors

SECTION

INTRODUCTION

I

GEOHERITAGE: A MULTIDISCIPLINARY AND APPLIED RESEARCH TOPIC

Emmanuel Reynard¹ and José Brilha²

¹University of Lausanne, Lausanne, Switzerland ²University of Minho, Braga, Portugal

TWENTY-FIVE YEARS OF DEVELOPMENT

For the last 25 years, since the International Conference on the Protection of Geological Heritage organised in Digne-les-Bains, France, in 1991 (Martini, 1994), there has been a growing scientific interest in topics related to geoheritage (geoconservation, geotourism, geoparks) and a large set of territorial initiatives have emerged all around the world.

The development of geoconservation – i.e., the policies, methods and actions aiming at conserving geoheritage, both *in situ* (geosites, geodiversity sites; Brilha, 2016) and *ex situ* (e.g., collections in museums) – is very differentiated, both temporally and spatially. Some countries or regions (e.g., the United Kingdom, Tasmania) have developed articulated policies and taken concrete measures to protect their geoheritage for more than 20 years, whereas in the vast majority of countries it is only very recently that the interest of political authorities for geoheritage has emerged, and the geoheritage is not or only very partially protected. However, the situation has evolved considerably and even if much remains to be done in order to better protect geoheritage throughout the world, there are indicators that actions carried out up to now are beginning to give results.

In 1992, at the Earth Summit in Rio de Janeiro, geoheritage was not one of the central issues that were debated. Throughout the 350 pages and the 40 chapters of the Agenda 21 (United Nations, 1992), the terms ‘geoheritage’, ‘geodiversity’ or ‘geoconservation’ are never used and a reference to geology only appears in three pages: in chapter 9, in objective 9.7, which requires an improvement in the understanding of the relationship between land and atmospheric processes; in chapter 10, which states that land resources, including geological resources, should be managed in an integrated manner; and finally, in chapter 22, where a measure requires investigations to be carried out to improve the deposition of radioactive material. Section 2 (Conservation and management of resources for development) contains the 14 chapters dealing with terrestrial resources; it focuses mainly on biological resources (five chapters) and on pollution and waste (five chapters). Some special environments (mountains, oceans) are also discussed. As for the three conventions arising from the Earth Summit (biological diversity, climate change, desertification control), none explicitly refer to the geological heritage.

The Millennium Declaration (United Nations, 2000), the aim of which is to enhance human dignity, equality and equity, does not put any emphasis on geoheritage. Nevertheless, georesources are