

The inclusion of the geodiversity and geoheritage in the Ordesa-Viñamala Action Plan 2017–2025 for the Spanish Network of Biosphere Reserves (SNBR)

Manu Monge-Ganuzas^{1,10}, Ángel Salazar^{2,10}, Nadia Herrero^{3,10},
Francisco Guillén-Mondéjar^{4,10}, Asier Hilario^{5,10}, Javier Lorente^{6,10},
Josep María Mata-Perelló^{7,10}, Juan Carlos Utiel^{8,10}, Enrique Díaz-Martínez^{9,10}

¹ Urdaibai Biosphere Reserve's Service, Environment, Territorial Planning and Housing Department, Basque government, Madariaga Dorretxea, San Bartolome auzoa 34-36, 48350 Busturia, Spain; e-mail: manu-monge@euskadi.eus

² Geological Survey of Spain (IGME), La Calera 1, 28760 Tres Cantos, Spain; e-mail: a.salazar@igme.es

³ Dirección general de Medio natural y Biodiversidad. Departamento de Agricultura, Ganadería, Pesca, Alimentación y Medio Natural, Generalitat de Catalunya, Doctor Roux 80, 08017 Barcelona, Spain; e-mail: nherrero@gencat.cat

⁴ Grupo de Investigación de Geología, Dpto. Química Agrícola, Geología y Edafología, Facultad de Química, Universidad de Murcia, Campus de Espinardo, 30100 Murcia, Spain; e-mail: mondejar@um.es

⁵ Basque Coast Unesco Global Geopark, Ifar Kalea 4, 20820 Deba, Spain; e-mail: flysch@gipuzkoa.eus

⁶ Qeiteo Cultural and Natural heritage, Coso 67-75, 50001 Zaragoza, Spain; e-mail: jlorente@qeteo.es

⁷ Departamento de Ingeniería geológica, Escuela Técnica Superior de Ingenieros de minas de Madrid, Universidad Politécnica de Madrid, Ríos Rosas 23, 28003 Madrid, Spain; e-mail: mata@emrn.upc.edu

⁸ Ayuntamiento de Lerma. Audiencia 6, 09340 Burgos, Spain; e-mail: utilerma@gmail.com

⁹ Geological Survey of Spain (IGME), Ríos Rosas 23, 28003 Madrid, Spain; e-mail: e.diaz@igme.es

¹⁰ Commission on Geological Heritage, Geological Society of Spain.

Keywords: biosphere reserves, geoheritage, geodiversity, Ordesa-Viñamala Action Plan

The need for a holistic approach in the design of a Nature conservation strategy: Natural diversity includes biotic elements (biodiversity) and abiotic elements (geodiversity). Biodiversity can be defined as ‘the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems’ (United Nations 1992^[2]). Geodiversity can be defined as ‘the natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (land form, processes) and soil features’ (Gray 2013). Both geodiversity and biodiversity are the elements determining the possibility of supporting Sustainable Development Goals (SDG) (Kozłowski 2004). It is fairly clear that there are several links between both, as geodiversity supports the majority of the biological processes of the Earth (Monge-Ganuzas 2017). Consequently, both should be considered in any Nature conservation strategy. Moreover, geoheritage refers to ‘(1) *in situ* occurrences of geodiversity elements with high value named geosites and (2) *ex situ* geodiversity elements that maintain a high value’ (Brilha 2016). The management of geosites is also

a decisive step in any Nature conservation strategy (Henriques *et al.* 2011).

The World Network of Biosphere Reserves (WNBR): As UNESCO (2018)^[1] states, composed of almost 670 biosphere reserves, the WNBR of the Man and Biosphere (MaB) Programme represents a unique tool for international co-operation through sharing knowledge, exchanging experiences, building capacity and promoting best practices. Thus, it fosters the harmonious integration of people and nature for sustainable development through: (1) Participatory dialogue; (2) Knowledge sharing; (3) Poverty reduction and human well-being improvements, and (4) Respect for cultural values and society’s ability to cope with change. In sum, WNBR is an international tool to implement the 17 SDG.

The main aims of biosphere reserves are: (1) Achieving the three interconnected functions: conservation, development and logistic support; (2) Outpacing traditional confined conservation zones, through appropriate zoning schemes; (3) Focusing on a multi-stakeholder approach with emphasis on the involvement of local communities in management; (4) Fostering dialogue for conflict

resolution; (5) Integrating cultural and natural diversity, especially the role of traditional knowledge in ecosystem management; (6) Demonstrating sound sustainable development policies based on research; (7) Acting as sites of excellence for education; (8) Participating in the World Network (Batisse 1982).

New MAB Strategy (2015–2025) and Lima Action Plan (2016–2025): MaB has adopted a new Strategy 2015–2025 together with an associated Lima Action Plan 2016–2025 to guide the WNBR. WNBR will work towards the SDG and contribute to implementing the 2030 Agenda for Sustainable Development. This will be done through implementation of the MaB Strategy, which consists of vision and mission statements, a series of Strategic Objectives and Strategic Action Areas, and an associated Lima Action Plan. The Lima Action Plan is presented as a matrix, structured according to the Strategic Action Areas of the MaB Strategy. It includes targeted outcomes, actions and outputs that will contribute to the implementation of the strategic objectives. It also specifies the entities with prime responsibility for implementation, together with time range and performance indicators. Using the MaB Strategy and Lima Action Plan as the key points of reference, MaB National Committees and MaB networks are strongly encouraged to prepare their own strategies and action plans.

Ordesa-Viñamala Action Plan 2017–2025: Spain has 48 biosphere reserves. On 21 September 2017, the Spanish Committee of the MaB Programme of UNESCO approved the Ordesa-Viñamala Action Plan to adapt the Lima Action Plan to the Spanish Network of Biosphere Reserves (SNBR). In a new way and for the first time, Ordesa-Viñamala Action Plan has adopted a holistic approach for Nature conservation. This approach has been pushed by the awareness actions carried out by the Commission on Geological Heritage of the Geological Society of Spain, among other organizations, the existence of International Union for Conservation of Nature (IUCN) resolutions about geoheritage and geodiversity, and strongly, the provisions about geodiversity and geoheritage of the Spanish Law 42/2007, about natural heritage and biodiversity. Consequently, this Plan has incorporated the following key-actions relative to geodiversity and geoheritage to be applied in the SNBR: (1) Promote the

Spanish biosphere reserves as places that contribute to the implementation of the IUCN resolutions relative to geodiversity and geoheritage; (2) Implement existing strategies at the regional level relative to geoheritage and geodiversity; (3) Promoting partnerships for the conservation of the geoheritage and for the benefit of the local population; (4) Promote research and monitoring in relation to climate change and its impacts on geological processes; (5) Promote the conservation of the geoheritage and the sustainable use of its economic value tourist, educational, recreational, or cultural.

Conclusions: The work of awareness-raising in relation to the importance of the geodiversity and geoheritage in the conservation of Nature at several levels has given its fruit at least in Spain. This is the case of the introduction of these issues in the Ordesa-Viñamala Action Plan 2017–2025 as key-actions. Taking into account that the WNBR are laboratories of export of visions and experience disseminated along the Earth, let us hope that this pioneering initiative go spreading across the network over time.

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IX ProGEO Symposium

**Geoheritage and Conservation:
Modern Approaches and Applications
Towards the 2030 Agenda**

**Chęciny, Poland
25-28th June 2018**



PROGRAMME AND ABSTRACT BOOK

Edited by

Ewa Głowniak, Agnieszka Wasiłowska, Paulina Leonowicz

This publication was co-financed by Foundation of University of Warsaw and ProGEO – The European Association for the Conservation of the Geological Heritage



Editors:

Ewa Głowniak, Agnieszka Wasiłowska, Paulina Leonowicz

Editorial Office:

Faculty of Geology, University of Warsaw,
93 Żwirki i Wigury Street, 02-089 Warsaw, Poland

Symposium Logo design:

Łucja Stachurska

Layout and typesetting:

Aleksandra Szmielew

Cover Photo:

A block scree of Cambrian quartzitic sandstones on the slope of the Łysa Góra Range – relict of frost weathering during the Pleistocene. Photograph by Peter Pervesler

Example reference:

Dunlop, L. 2018. Natural Capital – placing a value on geoconservation within a landscape framework in the UK. In: E. Głowniak, A. Wasiłowska, P. Leonowicz (Eds), Geoheritage and Conservation: Modern Approaches and Applications Towards the 2030 Agenda. 9th ProGEO Symposium, Chęciny, Poland, 25-28th June 2018 Programme and Abstract Book, p. 25. Faculty of Geology, University of Warsaw.

Print:

GIMPO Agencja Wydawniczo-Poligraficzna, Marii Grzegorzewskiej 8, 02-778 Warsaw, Poland

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ISBN 978-83-945216-5-3

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