

BIOSPHERE RESERVES

The team of the Thematic Group on Biosphere Reserves brings you recent news

November 2018 – Edition 2

Most of the photos in this newsletter are property of UNESCO and refer to the biosphere reserves designated in 2018.

Dear BRTG member,

We are pleased to bring you the second issue of the Newsletter of the Thematic Group on Biosphere Reserves of the IUCN Commission on Ecosystem Management (CEM). Our aim is to better connect the work of the CEM regarding issues such as ecosystem-based assessment, ecosystem governance, and resilience to activities within biosphere reserves, and to enhance collaborations between UNESCO and IUCN. One way to do this is through the exchange of information and good practices, so we invite you to read this newsletter and contribute to future issues – and let us know your proposals for future collaborative activities.

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BIOSPHERE RESERVES DESIGNATED IN 2018

On 23-27 July, the 30th Session of the International Coordinating Council (ICC) of the MAB Programme took place in Palembang, Indonesia. A new Bureau was elected, with Prof. Enny Sudormonowati, from Indonesia, as Chair. During the meeting, the ICC approved 24 new biosphere reserves (BRs) in 20 differente countries: Burkina Faso, China, Ecuador, India, Indonesia, Iran, Italy, Kazakhstan, Madagascar, Moldova, Mozambique, Netherlands, North Korea, Russia, Slovenia, South Africa, South Korea, Spain, Tanzania and United Arab Emirates. These include the first BRs for Moldova and Mozambique, bringing the total membership of the World Network of Biosphere Reserves (WNBR) to 686 in 122 countries. The quality control process instituted in 2013 continues to be effective: the ICC recognised 80 sites from 31 countries as meeting the criteria in the Statutory Framework of the WNBR, and three countries unilaterally withdrew BRs which did not fulfil the criteria (Australia 5 sites, Netherlands 1, USA 1).

The ICC approved terms of reference for a working group on a process of

'excellence and enhancement of the WNBR' with the objective of ensuring the long-term quality control of BRs, to report at the ICC in Paris in 2019. Recognising the importance of raising awareness of, and support for, BRs, the ICC approved a MAB Communication Strategy and Action Plan; it is hoped that all BRs will use this in coming years. The ICC also approved the membership and workplan for the working group on the technical guidelines for BRs, which will be developed over the coming two years as an online resource for those working and interested in BRs.

Download the Communication Strategy and Action Plan

BRTG ARTICLES

1. Khangchendzonga Biosphere Reserve, India

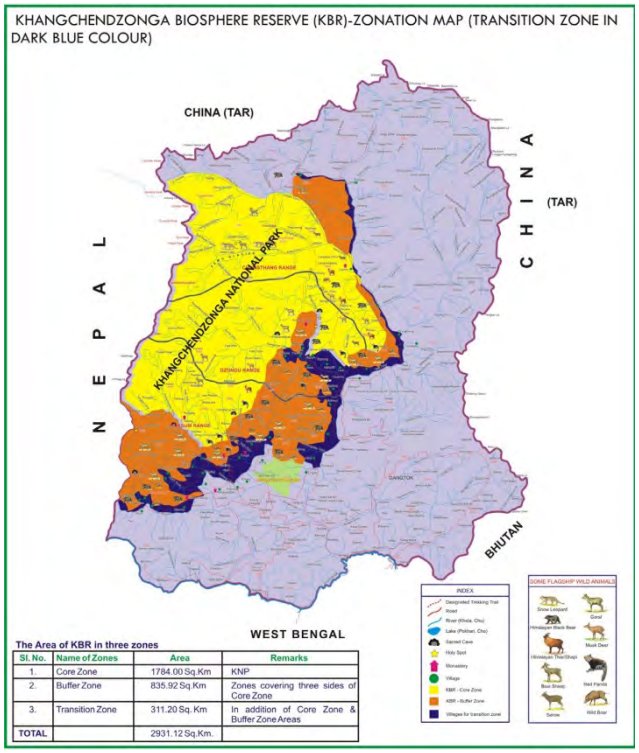
Dr. Deepu Sivadas
Plant Systematics & Evolutionary Science Division, Jawaharlal Nehru Tropical Botanic Garden & Research Institute

The Khangchendzonga Biosphere Reserve (KBR) of Sikkim joined the World Network of Biosphere Reserves during the 30th session of the MAB ICC. The KBR is the highest Biosphere Reserve in India, including the third highest mountain peak in the world, Kanchenjunga (8,586 m). India has 18 Biosphere Reserves: 11 internationally designated by UNESCO and 7 designated only under national legislation.

Situated between 27°15'-27°57' North Latitude and 88° 02'-88°40' East Longitude, KBR, with an area of 2,931.12 Km², represents the Trans-Himalayan biota in the eastern part of Hindukush Himalayas. KBR is the only major conservation area, with great ecological, faunal, floral, geomorphological, natural and zoological significance, in this part of the Himalayan belt. It includes a range of ecosystems varying from subtropical to arctic, as well as vast natural forests in different biomes that support an immensely rich diversity of forest types and habitats. KBR contains floral and faunal elements akin to Palaearctic and Oriental regions and, in addition, has a good representation of species endemic to the Himalaya.

The core zone - Khangchendzonga National Park - was designated a World Heritage Site in 2016 under the 'mixed' category. Many of the mountains and peaks, lakes, caves, rocks, stupas (shrines) and hot springs are sacred and pilgrimage sites. A total area of 1784.00 Km² is designated as core area, with 835.92 Km² and 311.20 Km² as buffer zone and transition area respectively.

Khangchendzonga is the finest example of an independent mountain with its own glacial system radiating from its several summits. There are around 19 glaciers, among them the huge, fearsome and turbulent looking Zemu glacier which, with a width of 300 m and length of 26 kilometres, is perhaps the largest in Asia.



The land in the KBR is generally mountainous, made up of mountains and peaks, glaciers, and lakes and snow-covered alpine zone in the northern and western parts and temperate forests towards the south. In between, these sub-alpine scrublands and woodlands are found. The KBR also harbours quite a number of alpine lakes, which are deeply venerated by the local people.

2. Adaptation to climate change in different management scenarios of Mancha Húmeda Biosphere Reserve in the framework of the TACTIC Project (Tools for Assessment of ClimaTe change ImpacT on Groundwater and Adaptation Strategies)

África de la Hera (IGME), David Pulido (IGME) and Anker L. Højberg (GEUS)
IGME-Instituto Geológico y Minero de España. Ríos Rosas 23, 28003 Madrid.

The European Geological Survey Organisations (GSOs) have recently initiated a joint research programme (GeoERA), through which the TACTIC (Tools for Assessment of ClimaTe change ImpacT on Groundwater and Adaptation Strategies) project is funded. Its aim is to develop a research infrastructure among the GSOs to advance and harmonize the assessments of primary and secondary impacts of climate change. Through 40 pilots, the project will cover a wide range of hydrogeological conditions and climate change challenges, including interactions between groundwater and surface water and effects on groundwater dependent ecosystems (GWDE). Data used for, and results from, the assessments will be made publicly available for display and further use in a common information platform. The assessments in the pilots are organized in four work packages:

WP3 will focus on challenges related to groundwater- surface water interaction (led by J. Kidmose [GEUS]); WP4 addresses groundwater recharge and vulnerability (led by M. Majdi [BGS] and H. Bessiere [BRGM]); WP5 focuses on salt/sea water intrusion problems (led by D. Pulido [IGME]), and WP6 on adaptation strategies (led by D. Pulido [IGME]), including also pilots to assess potential strategies in groundwater dependent ecosystems.

Within WP3 and WP6, two case studies (from Spain and Croatia) will focus on GWDE. In Spain, the focus will be on the Upper Guadiana Basin where more than 100 wetlands within the Mancha Húmeda Biosphere Reserve are naturally related to groundwater. This area is also subject to abstraction for drinking and irrigation. In addition to analysing the dependency between groundwater and surface water, the pilot will also address the conflict between preserving the GWDE and groundwater abstraction. To analyse possible solutions, a set of water management scenarios, with alternative adaptation strategies, will be designed with the involvement of different actors and stakeholders from different sectors of society. The effect of the scenarios will be analysed by use of groundwater modelling. The hydrogeological aspects will dominate the research, and GWDE will be analysed from an abiotic approach with special emphasis on groundwater-surface water interactions. The results will be studied in the light of sustainability between water management policies and provision of ecosystem services based mainly on wetland ecosystems.

3. The protection of shorelines against oil spills: Environmental Sensitivity Maps for the Moroccan coastal part of the Intercontinental Biosphere Reserve of the Mediterranean

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Environmental Sensitivity Maps for oil spills, quite common in the Gibraltar Strait area, were created for a protected area at Jbel Moussa mountainous ridge (Northern Morocco, i.e. southern Gibraltar Strait side), which is included in the Intercontinental Biosphere Reserve of the Mediterranean (IBRM), as a Site of Biological and Ecological Interest (SBEI).

The geomorphological characteristics of the studied coast were described, dividing the coast into 31 sectors within four bays: Ben Younech, Leila (Perejil), Oued Marsa and Dalia. These sectors are formed by low rocky coasts or high homogenous or fractured cliffs with, at places, blocks at their base. The existence of fractures is important because they, along with the presence of rocky blocks, control the permeability of the coast, favoring the accumulation and permanence of oil. For this reason, these sectors have a higher sensitivity with respect to those constituted by smooth and virtually impermeable, rocky

coast. The central parts of the above mentioned bays show sandy sectors composed essentially by coarse sands or gravels and pebbles.

The biological aspects have been essentially obtained from available bibliographic sources. The terrestrial fauna comprises different species of birds, reptiles and mammals; while the marine fauna includes cetaceans, several species of marine turtles, an important ichthyofauna and invertebrates (mollusks, both gastropods and bivalves).

Anthropic uses are very limited because this is a rural area with essentially agricultural and artisanal fishing activities. Many of the studied sectors have limited access, a fact that greatly limits clean-up techniques.

4. Assessing Ecosystem Services in Biosphere Reserves

Liette Vasseur
UNESCO Chair in Community Sustainability: From Local to Global, Brock University and CEM-IUCN Vice Chair (North America)/ Chair (Ecosystem Governance)

In the past few years, my experience as an assessor for periodic reviews of Biosphere Reserves (BRs) in Canada has shown me how, in general,BRs struggle with the concepts of Ecosystem Services (ES) and how to assess them. With a colleague in the Sectoral Commission on Natural, Social and Human Sciences at the Canadian Commission for UNESCO (who also helped me with these periodic reviews) and an advisory group, we have undertaken the process of writing a reflection document/ guide that simply explains ES and how BRs can assess those that are most relevant and important ones for their reserves.

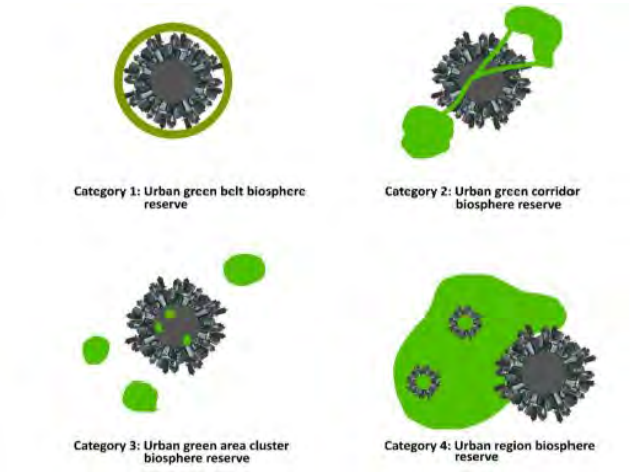
This guide aims to be interactive and collaborative. It is based on two components: 1) linking ES with the priorities and objectives of a given BR and 2) using the newest concept of “nature’s contributions to people” (re. IPBES) in order to better integrate the cultural aspects of ES. This document should be released to peer reviewers and gradually to BRs in Canada as a working paper before the end of 2018. It is then expected that it will be presented at workshops at various events as well as being piloted in a few BRs in Canada in 2019.

INFORMATION LINKS

1. **Urban biosphere reserves**

Modern compact cities: How much greenery do we need? *International Journal of Environmental Research and Public Health*. 15(10), 2018

https://doi.org/10.3390/ijerph15102180



2. **Chocó Andino de Pichincha Biosphere Reserve, Ecuador**

Main characteristics. Link

Video (info in Spanish). Link

3. **International Journal of UNESCO Biosphere Reserves**

http://biospherejournal.org/

PUBLICATIONS

Alonso-Yanez, G. 2017. Exploring Curriculum for Science Education: Lessons from a Mexican Biosphere Reserve. Journal of Education for Sustainable Development 11:2, 86–101. http://journals.sagepub.com/doi/pdf/10.1177/0973408218763443

Arnberger, A., Eder, R., Allex, B., Hutter, H-P., Wallner, P., Bauer, N., Zaller J.G., Frank, T. 2018. Perceived health benefits of managed and unmanaged meadows in a mountain biosphere reserve – an experimental study in the Austrian Alps. Journal on Protected Mountain Areas Research and Management 10 (1).https://dx.doi.org/10.1553/eco.mont-10-1s5

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Jamaliah M.M and Robert B. Powell, R.B. 2018. Ecotourism resilience to climate change in Dana Biosphere Reserve, Jordan. Journal of Sustainable Tourism, 26:4, 519-536, DOI: 10.1080/09669582.2017.1360893

Mayer, M., Brenner, L., Schauss, B., Stadler C., Arneggerd J., Job, H. 2018. The nexus between governance and the economic impact of whale-watching. The case of the coastal lagoons in the El Vizcaíno Biosphere Reserve, Baja California, Mexico. Ocean & Coastal Management 162, 46-59. https://doi.org/10.1016/j.ocecoaman.2018.04.016

Mollett, S. 2018. The Rio Platano Biosphere Reserve. A postcolonial feminist political ecological reading of violence and territorial struggles in Honduras. In: Land Rights, Biodiversity Conservation and Justice. Rethinking Parks and People. Mollett, S. and Kepe, T. (Eds.). Chapter 11. Routledge. London.

Mondino, E. and Beery, T. 2018. Ecotourism as a learning tool for sustainable development. The case of Monviso Transboundary Biosphere Reserve, Italy, Journal of Ecotourism. DOI: 10.1080/14724049.2018.1462371

Roubik D.W. 2018. 100 Species of Meliponines (Apidae: Meliponini) in a Parcel of Western Amazonian Forest at Yasuní Biosphere Reserve, Ecuador. In: Vit P., Pedro S., Roubik D. (eds) Pot-Pollen in Stingless Bee Melittology. Springer, Cham. https://doi.org/10.1007/978-3-319-61839-5_14

Schmitz, M., Arnaiz-Schmitz, C., Herrero-Jáuregui, C., Díaz, P., Matos, D., and Pineda, F. 2018. People and nature in the Fuerteventura Biosphere Reserve (Canary Islands): Socio-ecological relationships under climate change. Environmental Conservation, 45(1), 20-29. doi: 10.1017/S0376892917000169.