

# Thinking about Karst and World Heritage

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## Abstract

Various aspects of the operation of the World Heritage Convention have been reviewed over the last several years. The actual inscription criteria and process have been changed to reduce the differences between natural and cultural sites. This may well be of benefit to those seeking recognition of karst sites as many such sites have both natural and cultural values. At the same time, every effort is being made to reduce the number of new inscriptions, while at the same time endeavoring to ensure that the list is balanced, representative and credible. Efforts are being made to establish frameworks to enable more adequate assessment of representivity, and this paper will propose and examine a potential framework for cave and karst sites.

## The Basis of World Heritage

The World Heritage Convention, initially adopted by UNESCO in 1972, was established in order to provide for the proper identification, protection, conservation and presentation of the world's irreplaceable heritage (Convention 1-2.). It first came into operation in 1976. Any governments that are signatories to the convention may nominate potentially appropriate properties; the World Heritage Committee shall consider such nominations, and if the committee considers a nomination meets the established criteria, then the property concerned is inscribed on the World Heritage register.

The basic rules of the World Heritage program are established within the Convention ([www.unesco.org/whc/world\\_he.htm](http://www.unesco.org/whc/world_he.htm)). A further document, named *Operational Guidelines for the Implementation of the World Heritage Convention*, sets out the principles upon which judgments and decisions are made. Since 2000, the Guidelines have been thoroughly reviewed and amended (some details below) and the amendments were formally adopted in February 2005 (<http://whc.unesco.org/opgutoc.htm>).

The main change in the guidelines lies in the merging and integration of the cultural and natural criteria for assessment. Beyond this, they provide a detailed description of the role and responsibilities of each of the partners (State Parties, General Assembly, Committee and Advisory Bodies). They emphasise the participatory role of all stakeholders. Many concepts and definitions are clarified, including Global Strategy, thematic studies, comparative analysis, serial and trans-boundary properties, boundaries and buffer zones, referral and deferral, and procedures for boundary extensions or name changes.

## A Balanced, Representative and Credible List

A paper from IUCN (April 2004) spelled out the principle that there should be a more systematic strategy in place to ensure a more balanced, representative and credible list. However, it is based upon acceptance that the essential and most basic criterion required for inscription is that any property must be of *Outstanding Universal Value (OUV)* (Convention 1.). Any other strategy must be subsumed within this basic and universal criterion, and so it is also recognised that genuine representation of all natural systems will be neither feasible nor desirable. Current Initiatives include:

- A palaeontological sites study (Wells 1995) which reviews existing sites and identifies gaps,
- A process now working towards developing a similar report on geological sites and many other parallel studies of various groups of sites,
- The recently distributed broadly based Strategy Paper which discusses general principles and then examines representation across biomes and biogeographic regions.

At present, the only karst-specific lists are in the Proceedings of the Asia-Pacific Forum on Karst Ecosystems and World Heritage Mulu (2001) and the Proceedings of the 2004 Lipice Forum on the European region.

This paper will

- Identify the extent to which most karst sites have wide-ranging multi-dimensional values,
- Summarise characteristics of the currently inscribed karst sites,
- Examine the feasibility of categorising karst sites as a basis for identifying significant gaps.

## World Heritage

Some 50 karst sites have been inscribed. Many of these have other values and in some cases, the nomination and assessment processes, and hence management, give little attention to karst values. Only three are listed as mixed (natural and cultural) sites, while another nine are inscribed only as cultural sites.

Karst properties are often complex and dynamic, with multiple values. A seminal paper by Yuan Daoxian (1988) emphasised the interactivity and complexity of the karst environmental system. This concept was neatly summarised by an Australian karst scientist as “an extensive network of hydrologically integrated karst conduits fed by numerous tributary streams. This conduit network forms part of a karst system, incorporating component landforms, as well as life, energy, water, gases, soils and bedrock” (Eberhard 1994: 8).

So, karst often has . . .

- Invaluable geological data (particularly in the cave floors),
- Important geomorphic structures and processes,
- Characteristic surface and often significant landscapes,
- Important surface ecosystems,
- Even more important subterranean ecosystems,
- Fossils,
- Cultural heritage: pre-historic, historic and living.

## Towards Categories of Karst

It is extremely difficult to establish simple neat categories for such a multi-dimensional phenomenon as karst. What follows is still a draft, despite papers, displays and discussions on a number of occasions. Further comments will be indeed welcome.

Potential opportunities are listed as examples of the kind of sites that might be considered. Some are currently undergoing preparation for submission of a nomination, others have been formally recommended for nomination (e.g., at the Mulu and Lipice forums) while still others are simply outstanding examples. However, their inclusion in this list is not an endorsement or recommendation for inscription on the World Heritage List but serves to provide illustrative examples. The list has been compiled by the author following consultation with a large number of international karst experts and is not an official position of IUCN or WCPA.

In the listing of sites that follows, already inscribed World Heritage sites are shown in **bold type** at the first reference, other potential site opportunities in regular font and second or even further appearances in the list are in *italics*.

Obviously, there are two major categories at the beginning which each comprise a diversity of sites, but it has been difficult to identify further key categories

within these. Several people have commented that one or more of these sites should be considered as being in a category of their own as unique locations. But because of its multi-dimensional complexity, this is true of virtually all karst sites! However, Osborne (in press) has identified the extent to which some of these sites and some others have a distinctive character. This results from the complex multiphase and multi-process evolutionary processes to which the sites concerned have been subject. The sites that he has identified include the Eastern highlands impounded karsts of Australia together with sites in the Czech Republic, Slovakia and Hungary.

## Acknowledgements

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<b>Proposed Category</b>	<b>Site Names / State</b>	<b>Examples of Potential Opportunities</b>
Particularly large and complex sites	<b>Mammoth Cave, USA</b> <b>Carlsbad Caverns, USA</b> <b>Three Rivers, China</b> <b>Aggtelek &amp; Slovak Karst, Hungary &amp; Slovakia</b> <b>Gunung Mulu, Malaysia</b> <b>Western Caucasus, Russia</b> <b>Skocjanske Jame, Slovenia</b> <b>Phong Nha Ke Bang, Vietnam</b> <b>Puerto Princesa, Philippines</b>	Nullarbor Plain, Australia Postojna-Planina, Slovenia Moravian Karst, Czech Republic Ghar Alisadr, Iran Kahurangi, New Zealand Hin Namno, Lao PDR (as a transboundary park with Phong Nha Ke Bang) Maros Karst, Indonesia Niah Great Cave, Malaysia Gomantong, Malaysia Various Papua New Guinea, including Kikori-Darai, Muller Plateau, Nakanai-Whiteman Ranges, Hindenburg Wall
Impounded Karsts  [often relatively small areas of karst surrounded by other rocks, and receiving (allogenic) water drainage from those other rocks ]	<b>Canadian Rockies, Canada</b> <b>Nahanni, Canada</b> <b>Pyrennes-Mont Perdu, France &amp; Spain</b> <b>Grand Canyon, USA</b> <b>Tasmanian Wilderness, Australia</b> <b>Blue Mountains, Australia</b> <b>Eastern Rainforests, Australia</b> <b>Te Wahipounamu, New Zealand</b> <b>Pirin, Bulgaria</b> <b>Durmitor, Yugoslavia</b> <b>Thung Yai Hua Kha Khaeng, Thailand</b> <b>Lorentz, Indonesia</b> <b>Lake Baikal, Russia</b>	
Geodiversity on Towerkarst, Cone karst, and similar	<b>Tsingy de Bemeraha, Madagascar</b> <b>Ha Long Bay, Vietnam</b> <b>Wulingyuan, China</b> <b>Vinales Valley, Cuba</b>	China (proposed serial nomination): Guizhou, Shilin, Guilin/Yangshuo, Mt Jin Fo, Wulong, Fengdu, Fenjie. Gunung Sewu, Indonesia Sangkulirang, Indonesia West Kimberley ranges, Australia
Desert Karsts		<i>Nullarbor Plain, Australia</i> Namibia Various Central Asia
Aeolian or Syngenetic sites	<b>Lord Howe Island, Australia</b>	Margaret River and Limestone Coast, Australia
Karst in non-limestone rocks	<b>Purnululu, Australia (quartzite)</b> <b>Cainama, Venezuela (quartzite)</b> <i>Wulingyuan, China (sandstone)</i>	Braslian quartzite caves Ruined City, Arnhem Land, Australia (quartzite) Italian gypsum karst Kungur Ice Cave, Russia (gypsum) Thai halite karst
Sulphur-based Karst	<i>Carlsbad Caverns, USA</i>	Cueva de Villa Luz, Mexico Movile Cave, Romania
Travertine Terraces	<b>Huanglong, China</b> <b>Jiuzhaigou, China</b> <b>Plitvice, Croatia</b> <b>Pamukkale, Turkey</b>	
Island Sites	<b>Alejandro de Humboldt, Cuba</b> <b>East Rennell, Solomons</b> <b>Henderson (Pitcairn), UK</b>	Fiji Niue Palau Trobriand Is., Papua New Guinea
Marine / Coastal sites	<b>Desembarco del Granma and Cabo Cruz Terraces, Cuba</b> <b>Shark Bay, Australia</b>	Blue and Black Holes, Bahamas Cape Range & Ningaloo Reef, Australia (Nomination pending) Huon Peninsula, Papua New Guinea Submerged caves of the Pacific and Caribbean

## World Heritage

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Hydrological Diversity	<b>Sian Ka'an, Mexico</b> <i>Skocjanske Jame, Slovenia</i> <i>Phong Nha Ke Bang, Vietnam</i> <i>Puerto Princesa, Philippines</i>	Katavores of Argostoli, Greece
Cenote Karst	<b>Chichen Itza, Mexico</b>	Yucatan, Mexico Florida, USA Limestone Coast, Australia
Mineralogically diverse sites	<i>Carlsbad Caverns, USA</i>	France (Serial nomination pending) Cupp-Coutunn, Turkmenistan Black Hills, USA
Climatologically rich sites	<i>Skocjanske Jame, Slovenia</i> <i>Aggtelek &amp; Slovak Karst, Hungary &amp; Slovakia</i>	<i>Nullarbor Plain, Australia</i> <i>Kungur Ice Cave, Russia</i>
Biodiversity	<i>Mammoth Cave, USA</i> <i>Skocjanske Jame, Slovenia</i> <i>Gunung Mulu, Malaysia</i> <i>Sian Ka'an, Mexico</i> <i>Tasmanian Wilderness, Australia</i> <i>Blue Mountains, Australia</i>	<i>Nullarbor Plain, Australia</i> Cape Range & Ningaloo Reef, Australia (Nomination pending) Postojna-Planina, Slovenia Vjetrenica, Bosnia & Herzegovina Cueva Guacharo, Venezuela <i>Niah Great cave, Malaysia</i> <i>Gomantong, Malaysia</i> <i>Sangkulirang, Indonesia</i> <i>Submerged caves of the Pacific and Caribbean</i>
Palaeontological sites	<b>Fossil Mammal Sites (Naracoorte and Riversleigh), Australia</b> <b>Atapuerca, Spain</b> <i>Grand Canyon, USA</i>	<i>Nullarbor Plain, Australia</i> Kahurangi, New Zealand (especially at Karamea) Bärenhöhle, Switzerland
Archaeological sites	<b>Zhoukoudian, China</b> <b>Altamira, Spain</b> <b>Fossil Hominoid Sites, South Africa</b> <b>Caves of the Vézères, France</b> <i>Grand Canyon, USA</i> <i>Atapuerca, Spain</i> <i>Chichen Itza, Mexico</i>	<i>Nullarbor Plain, Australia</i> Piatra Altarului, Romania Grotte Chauvet, France
Socially or culturally rich sites	<b>Vinales Valley, Cuba</b> <b>Sodra Olands Odlingslandskap, Sweden</b> <b>Luang Prabang, Lao PDR</b> <i>Chichen Itza, Mexico</i>	

