

A Discussion on Definitions of Geodiversity

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Many definitions of 'geodiversity', can be found in Britain and also the wider world, although the term appears to be mostly restricted to Europe and Australia. These definitions vary from one to the next, but what they appear to have in common is a desire to be very inclusive in what they define as 'geodiversity'. In general all definitions could be said to 'agree' on what geodiversity is, although there is some uncertainty and possible disagreement on the role of cultural aspects in geodiversity. Leaving this latter element aside, an amalgam of definitions as found from a web search on 'geodiversity' runs something like this :

Geodiversity is the variety/natural range/range/diversity of the non-living environment/abiotic nature; or, less obviously all-embracing, but always accompanied by an expanded explanation which shows that they are intended to be all-embracing, ***'geological nature/geological features/the geological environment'***.

The terms such as 'non-living environment' and 'geological nature' in the definitions are usually qualified and often replaced by a more expanded list which may be either of the type:

'geological, geomorphological and soil features, assemblages, relationships, properties, systems, aspects, environments, phenomena, and natural processes'

or may be expanded further as follows:

This....	may be replaced by/expanded to this...	and/or this.....
geological features ¹ / bedrock/ geology	geological features + palaeontological features	rocks + minerals + fossils +/- sediment (?) ² +/- evidence of Earth history ³
geomorphological features/ geomorphology	geomorphological features/ geomorphology + soil ⁴ +/- surface waters/water (?)	landforms + soil(s) +/- landscapes +/- sediment (?) +/- other superficial deposits +/- surface water/water (?) +/- evidence of Earth history
Processes ⁵	natural processes/ natural landscape forming processes +/-	geological, geomorphological and soil processes +/- range of atmospheric/climatic,

¹ 'features' may be replaced or added to by any, or a selection of any of, the following: 'assemblages', 'relationships', 'properties', 'systems', 'aspects', 'environments', 'phenomena'.

² (?) indicates uncertainty about which category (geological, geomorphological, or natural processes) this entity is viewed as being included in.

³ 'evidence of Earth history' is a slightly odd category as it could be taken to include scientific results, papers, maps, mine models or other interpretations of the geo-record, or only the rock/landscape/soil containing the information. Which is meant is unclear.

⁴ see discussion below table.

⁵ Gray 2004 includes 'processes' under 'geomorphological features'

	systems created (partly) by human activity ⁶	hydrological & biological processes currently acting on rocks, landforms and soils +/- surface waters/water (?) +/- evidence of Earth history
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There is no evidence, from reading these definitions, that any aspect of Earth heritage is deliberately excluded from geodiversity. Where entities are missing from definitions, it appears likely that this reflect the interests of the person/group writing the definition and how they mentally group things together under headings. For example water may be included specifically as 'water' (though not often), or as 'hydrological processes', or may be included under 'geomorphological processes'.

The exception to this may be soil, which is listed under 'geomorphology' in the above table on the assumption that where it is missing from definitions, it is included under 'geomorphology'. It is likely that soil has been omitted in some cases simply because it has been 'forgotten about' by non-soil-enlightened Earth scientists, but there is a possibility that it may have been deliberately omitted in some cases because it has been classed as 'living' rather than 'non-living'. Whether this is the case is unclear and, in any event, the consensus view (number of inclusions to number of emissions) is clearly that soil *should* be included in geodiversity.

Cultural aspects of geodiversity

As already stated there seems to be some disagreement on the role of cultural aspects in geodiversity. Including any sort of cultural aspect seems limited to Europe with no mention of culture in any Tasmanian or other Australian definitions.

In British/European definitions there appears to be a continuum between defining geodiversity as 'the link between people, landscape and culture' (e.g. Stanley 2001) – making the cultural dimension prominently important; through stating that geodiversity has 'a cultural dimension' (e.g. Durham County Council - including the way minerals have been used, understood, collected, recorded and interpreted; and inclusion of similar aspects in BGSs Geodiversity audits of Durham and North Pennines); acknowledging that geodiversity helps define culture; and stating that cultural aspects such as building stone can be used to promote geodiversity; to not mentioning cultural aspects at all.

From the wording of definitions, the 'pro' cultural definitions largely appear to stem from Stanley 2001⁷ and the uptake of the cultural dimension (e.g. building stones and decorative stonework, mining heritage incl. mine models, and spar boxes) by BGS in its geodiversity audits in northern England. There are other proponents of the cultural dimension, the most extreme example found in the web search being Dr. Minnigh, University Delft.; and perhaps the most important being the wording of the European Manifesto on Earth Heritage and Geodiversity which starts with the sentence: 'Geodiversity links the Earth, its people and their culture'; however, this

⁶ Only found mentioned once specifically, by Stefan Kozlowski (Poland), but could be considered implicit as human activity affects climate, water flow etc

⁷ Note that the definition on the Geological Survey of Sweden website is almost identical to that used by the RSNC when responding over the aggregate levy sustainability fund, and both have strong similarities to Stanley 2001

wording appears more to define what geodiversity *does* than what it *is* (contrast to Stanley 2001: 'Geodiversity is the link between people, landscape and their culture').

Overall, there appears to be no dispute against the idea that geodiversity influences culture, people and landscape and as such can be seen as providing a link between these. How strongly this aspect of geodiversity is included in definitions may depend to a certain extent on who the definition is written by and for. Those concerned primarily, for example, with geological site conservation may consider this aspect to be irrelevant to their definition, whereas those interested in mining and mining heritage may see the links as very clear and important.

Colin Prosser (English Nature) mentions the inclusion of cultural and also biological aspects within geodiversity in his 2002 article in *Earth Heritage* (Issue 17, p12-13): 'Given that biodiversity is defined as the 'biological diversity' or 'variety of living things', geodiversity has to be 'geological diversity' or the 'variety of rocks, fossils and minerals and natural processes. ..[]. However, geodiversity is now being used in a very holistic way to emphasise the links between geology, wildlife and people etc. We support the use of this term to describe geology in its widest sense...'

Murray Gray also appears to give some weight to cultural aspects by including 'interpretations' in his definitions: 'Geodiversity refers to the topography, structure and natural form of the land: the natural range of soil, geomorphological and geological features. It includes their assemblages, relationships, properties, interpretations and systems' (Gray, 2003)

Conclusion

Definition: 'Geodiversity is the variety of rocks, minerals, fossils, landforms, sediments and soils, together with the natural processes which form and alter them.' (or an alternative phrase with the same meaning!).

Incidentally and *not* by definition: Geodiversity is also the link between people, landscape and culture.

Therefore, the geodiversity of a hill will be the variety of its rocks, landforms, soils etc. The geodiversity of a house will be the variety of its natural building stone (rocks). Note that it is the natural composition, origins etc of the rock which is part of the geodiversity *not* what it has been used for or to represent by humans. Similarly rock in buildings and sculptures ('building stone'), minerals in display cases (e.g. spa boxes) etc. are part of an area's geodiversity but because of their natural origins and not because of the link they create between geology and culture. The link is incidental to the geodiversity; but that does not mean it is unimportant!

Mine models and maps etc may be seen as *providing information on* the geodiversity of an area and as such it makes sense to include mention of them in a geodiversity audit; but are they really part of the geodiversity of the area? They only tell us about rocks, minerals, processes etc., they are not themselves any of these entities, so by the definitions above they are not part of the area's geodiversity.

Attributed definitions

Stanley, M. (2001): Welcome to the 21st century. Geodiversity Update. No. 1 p1
"So what is geodiversity? It is the link between people, landscape and their culture: it is the variety of geological environments, phenomena and processes that make those landscapes, rocks, minerals, fossils and soils which provide the framework for life on Earth."

Eberhard, R., (ed.) (1997): Pattern and Process: Towards a Regional Approach to National Estate Assessment of Geodiversity; 1997 Technical Series No. 2, Australian Heritage Commission & Environment Forest Taskforce, Environment Australia, Canberra.

The following are quoted from secondary sources:

"Geodiversity is the natural diversity of geological, landform and soil features, and processes."

"Geodiversity includes evidence for the history of the earth (evidence of past life, ecosystems, and environments) and a range of processes (biological, hydrological and atmospheric) currently acting on rocks, landforms and soils."

Sharples, C. (1995): Geoconservation in forest management - principles and procedures; Tasforests, Vol. 7, p. 37 - 50, Forestry Tasmania, Hobart, Dec. 1995.

The following is quoted from secondary sources:

"[Geodiversity is] the range or diversity of geological (bedrock), geomorphological (landform) and soil features, assemblages, systems and processes."

Gray, M. (2003): Geodiversity – Valuing and Conserving Abiotic Nature

'the definition used in this book, which is a modification of that used in Australia (see above):

"Geodiversity: the natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (land form, processes) and soil features. It includes their assemblages, relationships, properties, interpretations and systems" '

Selected definitions from web search

Britain

Cheshire County Council

http://www.cheshire.gov.uk/Planning/NaturalHistoricEnv/Natural/NHE_Natural_Geodiversity.htm

Geodiversity, or geological diversity, is the variety of rocks, fossils, minerals and natural processes. It can be also defined as "the link between people, landscape and their culture – the variety of geological environments, phenomena and processes that make those landscape rocks, minerals, fossils and soils which provide the framework for life on earth."

Sustainable Cheshire Forum

<http://www.sustainablecheshire.org.uk/heritageinformation.htm>

Geodiversity is the variety of soils, rocks, fossils and minerals as well as natural processes such as river processes, which are present throughout the whole county.

<http://www.sustainablecheshire.org.uk/documents/geodiversity.doc>

Geodiversity is the variety of geological environments, phenomena and active processes that make landscapes, rocks, minerals, fossils, soils and other superficial deposits which provide the framework for life on Earth, i.e. it is the "stage" upon which all other forms of life are "actors". Geodiversity is the link between people, landscape and their culture through the interaction of Biodiversity with soils, minerals, rocks, fossils, active processes and the built environment.

Cornwall RIGS/Cornwall & Isles of Scilly LGAP

<http://www.cornwallwildlifetrust.org.uk/rigs/pdf/geodiversityactionplansummary.pdf>

Geodiversity is the name given to the variety of rocks, minerals and fossils (geology), together with the variety of soils, natural processes and landforms (geomorphology).

Devon County Council

http://www.devon.gov.uk/index/environment/natural_environment/geology/geodiversity-2.htm

The term geodiversity incorporates all the variety of rocks, minerals and landforms and the processes which have formed these features throughout geological time. [].... When pieced together, these give insight to past climates, earlier environments and life on earth.

[In contrast, geological and geomorphological conservation – increasingly referred to as ‘geoconservation’ - is the discipline concerned with the protection, active management or interpretation of geodiversity.]

Dorset County Council

<http://www.dorsetcc.gov.uk/index.jsp?articleid=167239>

Geodiversity is the range of rocks, fossils, minerals, soils, landforms and natural processes that go to make up the Earth's landscape and structure.

Geodiversity links people, culture, landscape and biodiversity. It underpins all our activities from farming to engineering, gardening to waste management, recreation to industry.

Durham County Council

<http://www.durham.gov.uk/landscape/usp.nsf/pws/Landscape+-+Landscape+Strategy+-+Broad+Issues+-+Geodiversity>

Geodiversity - the variety of rocks and minerals, landforms, soils and geological process - is a key component of our natural heritage. It is fundamental to the character and diversity of our landscapes, influencing both their physical form and their natural vegetation, which in turn have influenced patterns of farming and settlement.

Geodiversity as a concept also has a cultural dimension – it encompasses the way minerals have been used, understood, collected recorded and interpreted.

North Pennines ANOB

<http://www.northpennines.org.uk/media/pdf/n/f/GAP%20Section%201.pdf>

Geodiversity ..[]... may succinctly be encompassed in Stanley's 2001 definition: "the variety of geological environments, phenomena and processes that make those landscapes, rocks, minerals, fossils and soils which provide the framework for life on earth." (Stanley, M. 2001. Welcome to the 21st century. Geodiversity Update. No.1 p.1). Geodiversity makes the link between people, landscape and their culture and is one of an area's chief natural resources. It has a profound influence on the landscape, habitats and species and also on the economic activities and history of settlement in any given place.

Northumberland National Park

<http://www.northumberland-national-park.org.uk/NR/rdonlyres/563BAAB5-6163-4DC8-A0BB-65C95D9B1B76/0/NorthumberlandNationalParkGeology.pdf>

Geodiversity is the link between people, landscape and their culture: it is the variety of geological environments, phenomena and processes that make those landscapes, rocks, minerals, fossils and soils which provide the framework for life on earth." (Stanley, M. 2001. Welcome to the 21st century. Geodiversity Update. No.1 p.1).

Somerset County Council

<http://www.somerset.gov.uk/somerset/ete/countryside/geodiversity/>

Geodiversity incorporates all the variety of rocks, minerals and landforms and the processes which have formed these features through geological time. Best known are those rare and exceptional

occurrences such as dinosaur footprints, but there are many more less-exceptional but equally important pieces of the geological jig-saw puzzle, which, when added together, give insight to past climates, earlier environments and life on earth.

Somerset Environmental Records centre/Somerset Geology Group

<http://www.somerc.com/news.php?id=81>

Now that Geodiversity Action Plans are becoming a local government requirement, the Somerset Geology Group see a need to review, clarify and publicise exactly what geodiversity entails. A brief definition might be: *The totality of rocks, landforms, soils and water*. Our aim should be to conserve and promote awareness and interest in these and in their sustainable use e.g. aggregates, water resources and building stone.

Staffordshire GAP

http://www.sbap.org.uk/sgap/html/sgap_index.htm

Geodiversity is a term that can be broadly defined as encompassing the variety of rocks, fossils and minerals and natural landscape forming processes on the earth. This is taken to include all geomorphological features and landscapes resulting from weathering and transportation of soils and rocks.

Leeds University website

<http://www.quarry.leeds.ac.uk/goodquarry/article.asp?id=133&navid=17>

Geodiversity

Geodiversity is the variety of rocks, fossils, minerals, landforms and soils, along with the natural processes that shape the landscape. Studying geodiversity enables the history and evolution of the earth to be understood, which plays an important role in managing the current and future environment through understanding climate change and natural hazards (such as flooding and landslides). It also contributes to economic development by guiding the minerals industry to new resources. Geodiversity helps to shape our landscape and provide distinctive building materials. It provides a recreational and educational resource and influences the type and distribution of wildlife habitats.

<http://www.quarry.leeds.ac.uk/goodquarry/article.asp?id=132&navid=17>

Geodiversity + Biodiversity

There is an intrinsic relationship between biodiversity and geodiversity. Whether this is expressed in a subtle fashion (e.g. soil or water chemistry), or more obviously as is the case with landforms (e.g. cliffs, limestone pavement, peat bogs, downland and mountains), the two are interlinked (Fig 15&16).

English Nature LGAP brochure

<http://www.english-nature.org.uk/pubs/publication/pdf/LGAPs.pdf>

Geodiversity is a relatively new term and includes the “variety of rocks, fossils, minerals, landforms and soils, along with the natural processes that shape the landscape”.

Minerals and Nature Conservation Forum

<http://www.quarrying.info/natureconservation/geod.htm>

Geodiversity is a relatively new term that means the variety of geological features and sits alongside biodiversity (which means 'the variety of living things'). Geodiversity encapsulates features of interest to both geologists and geomorphologists.

RSNC response re Aggregate levy sustainability fund

<http://www.geolsoc.org.uk/template.cfm?name=Response1026>

Geodiversity is the variety of geological environments, phenomena and active processes that make landscapes, rocks, minerals, fossils, soils and other superficial deposits which provide the framework for life on Earth. Geodiversity is the link between people, landscapes and their culture through the interaction of biodiversity with soils, minerals, rocks, fossils and active processes and the built environment. An appreciation of geodiversity and the Earth's finite resources is essential if we are to achieve sustainable development.

Europe

European Manifesto on Earth Heritage and Geodiversity

http://www.eurogeologists.de/ManifestoEarthHeritage_Geodiversity.pdf

Geodiversity links the Earth, its people and their culture. It forms the basis of the European society. Earth heritage including landscapes, landforms, rocks, sediments, soils, minerals, fossils and water, is an essential part of Europe's natural heritage. A geological, geomorphological and soil heritage that needs to be safe-guarded for present and future generations.

C. Fassoulas and P.J. Mc Keever on behalf of the Coordination Committee of the European Geoparks Network (Progeo website)

http://www.progeo.se/news/2_2004/geoparknw.htm

Its [geodiversity's] importance is still underestimated and mismatched with respect to biodiversity, although "geodiversity is the link between people, landscape and culture; it is the variety of geological environments, phenomena and processes that make those landscapes, rocks minerals, fossils and soils which provide the framework for life on Earth (Stanley 2001)". The situation however that still exists in many organizations is exemplified by Milton (2002): "Diversity in nature is usually taken to mean diversity of living nature ..."

Margarete Patzak, Division of Earth Sciences, UNESCO

<http://egis.cefe.cnrs-mop.fr/Tourism%20Frontpages/patzak%20article.htm>

'Three main objectives are emphasized as a basis for enhancing the promotion of geological heritage through the Geoparks initiative:

- 1) the use of geological sites in educating the broad public, and teaching in geological sciences and in environmental matters (geodiversity);
- 2) their potential as a tool to ensure sustainable development (geotourism); and
- 3) the conservation of the geological heritage for future generations (geoconservation).'

'Geoconservation can be defined after Sharples (1995) as the conservation of geodiversity for its intrinsic, ecological and (geo)heritage values. 'Geodiversity' is a quality we are trying to conserve. After Sharples (1995), it can be defined as the range or diversity of geological (bedrock), geomorphological (landform) and soil features, assemblages, systems and processes. As a logical reasoning, this includes also hydrological and climatic (atmospheric) processes, insofar as these are involved in geological, landform and soil processes. Geodiversity (after Eberhard 1997) includes evidence for the history of the earth (evidence of past life, ecosystems, and environments) and a range of processes (biological, hydrological and atmospheric) currently acting on rocks, landforms and soils.

The usefulness of the term 'geodiversity' is that it highlights the idea that one of the fundamental aims of geoconservation should be to at least conserve suites of features and processes representative of the full diversity of natural geological, landform and soil processes and features. In this respect, the term is analogous to the term 'biodiversity', which bioconservationists use to highlight the importance of conserving biological genetic, species and community diversity. However, it is important to note that the only analogy implied between 'geodiversity' and 'biodiversity' is that both involve a diversity of phenomena; beyond this self-evident similarity, no further analogies between the detailed nature or workings of biological and geological processes are expressed or implied.'

European Union Soil Thematic Strategy: Geodiversity and Geoheritage as features of Soil Protection

<http://forum.europa.eu.int/irc/DownLoad/kweqARJEmIGCWg6SU1-C7dAl6fk6f2jMyuQSm-iVNSDDTSUyGgSIKZOH3t3p5Lbtcl2QuE/Geodiversity%20and%20Geoheritage%20as%20features%20of%20Soil%20Protection.DOC>

Definitions

Geodiversity, geoheritage and geoconservation are defined as follows:

\$ Geodiversity refers to the topography, structure and natural form of the land: the natural range of soil, geomorphological and geological features. It includes their assemblages, relationships, properties, interpretations and systems (Gray, 2004).

\$ Geoheritage comprises concrete examples of geodiversity which may be specifically identified as having conservation significance.

\$ Geoconservation is the endeavour of trying to conserve geodiversity and geoheritage (Sharples, 2002).

Geodiversity in the Nordic countries

http://www.sgu.se/hotell/progeo/news/1_99/geodiv.html

The concept 'Geodiversity' means the variation of the bedrock, the deposits, the terrain forms, and the geological processes that form landscapes.

Geodiversity describes the variation of geological phenomena and processes in a defined area. This may be a district, a region, a continent etc. Geodiversity is related to scale depending on the size and the detail degree when studying and describing an geological phenomena. Different levels and scales can be distinguished for geodiversity as well as for biodiversity. Geodiversity is an expression of different geological environments, such as volcanic, glacial, fluvial or littoral; and themes; e.g. stratigraphy, morphology. Biodiversity depends essentially on geodiversity - on the geological environment with its variations. For instance, some plants need certain minerals and elements; certain plant societies are rooted in specific substrata, and some animals are adapted to sand dunes, others to river banks. Certain vegetation types indicate specific geological features. Geodiversity gives landscapes their profiles with landscape elements built up by geological building-stones.

The Geological Survey of Sweden (SGU)

http://www.sgu.se/hotell/progeo/news/1_2001/strategy.html

"Geodiversity is the variety of geological environments, phenomena and active processes that make landscapes, rocks, minerals, fossils, soils and other superficial deposits which provide the framework for life on Earth. Geodiversity is the link between people, landscapes and their culture through the interaction with biodiversity, soils, minerals, rocks, fossils, active processes and the built environment."

Geological survey of Finland

http://www.gsf.fi/pssd/GTK_for_PSSD/GTKs_contribution_to_PSSD/geodiversity.htm

Geodiversity indicates the variety of geological nature, such as geomorphology or the structure and composition of bedrock areas.

(Geoindicators made for Lohja municipality constitute)

Stefan Kozłowski (Poland): Geodiversity – the concept and scope of geodiversity

http://www.pgi.gov.pl/pdf/pg_2004_08_2_22a.pdf

"geodiversity is the natural variety of the Earth's surface, referring to geological and geomorphological aspects, soils and surface waters, as well as to other systems created as a result of both natural (endogenic and exogenic) processes and human activity" (Kozłowski et al., 2004a)

[Kozłowski S., Migaszewski Z. & Galuszka A. 2004a – Znaczenie georóżnorodności w holocenyckiej wizji przyrody. Prz. Geol., 52: 291-294.]

Dr. Leo D. Minnigh, Library Technical University Delft

l.d.minnigh@library.tudelft.nl

<http://www.learning-org.com/02.02/0081.html>

Dear LO'ers,

At invited me to write something on geodiversity:

> Anyway, my version is but one version. Tell us how it was with you at times when you were actively
> studying "geodiversity"?

I will try, but one of the first thoughts that formed in my mind was: I will not restrict the subject to only geodiversity.

Have you, dear readers any idea why some nations are very great, while others are small? Europe is shows a patchwork pattern of countries, whereas Africa shows a complete other pattern. So with the Americas and Asia. This is part of geodiversity.

Why are some areas densely populated, whereas others are nearly empty? How is it to live in a low country, beneath sea level like here in the Netherlands? And how is it to live in the mountains of New Zealand, or Rocky Mountains? One of the first things one may observe are the buildings in these different areas. Lack of hard rocks in Netherland resulted in making rocks by baking clay. The houses are mainly built of bricks. In mountainous areas the houses look different and are made of natural rock. The variety of the ground we live on results in a variety of houses, street plans and cities. This is also part of geodiversity.

How is it in central Canada and how is it in Alaska? How is it to live in a stable world or in a world of earthquakes and volcanoes? This is part of geodiversity. How are the people, dialect, music, the houses, the cities, the vegetation, the birds, the landscape on the Isle of Wight and how are all these things in Cornwall, both in the south of England.

Geodiversity, the variety of the ground underneath us. Different rocks, different soils. Rocks different in chemical composition, different in mineralogical composition, different in internal structure, different in age. Vast areas with the same rocks, or rocks with great variety on short distances in a patchwork of countries and regions.

It is a pity that so much organisations and people think exclusively in geodiversity, or in biodiversity, or in antropodiversity, or in citydiversity, or indiversity. It sounds like UNIdiversity - an oxymoron. I see it with growing irritation in my own country, where all kinds of societies in nature conservation have only eyes for the biotic world and not for the abiotic world underneath us. But also the city planners, and planners of infrastructure. They have no idea of the close relationships between the earth and its inhabitants. Not the slightest idea of seven golden aspects (7 E's).

I wrote this yesterday and saved it in my computer, before sending. Now I have read it again, I sense a lot of angriness in my writings. Dear readers, this irritation is only superficial; there is a greatbodydiversity insight me that gives me a mild feeling :-))

Australia

Australian Natural Heritage Charter

<http://www.ahc.gov.au/publications/anhc/parta.html#1.4>

Geodiversity means the natural range (diversity) of geological (bedrock), geomorphological (landform) and soil features, assemblages, systems and processes. Geodiversity includes evidence of the past life, ecosystems and environments in the history of the earth as well as a range of atmospheric, hydrological and biological processes currently acting on rocks, landforms and soils.

Parliament of Australia, Department of Parliamentary Services

http://www.aph.gov.au/jhd/EMS/EMS_Glossary.htm

Geodiversity: The natural range (diversity) of geological (bedrock), geomorphological (landform) and soil features, assemblages, systems and processes. Geodiversity includes evidence of the past life, ecosystems and environments in the history of the earth as well as a range of atmospheric, hydrological and biological processes currently acting on rocks, landforms and soils (NHTC).

Sydney Harbour Federation Trust

<http://www.harbourtrust.gov.au/downloads/acrobat/plan/planobjpol.pdf>

Geoconservation aims to protect the natural diversity of the non-living environment. This means protecting significant landforms, bedrock and soil features and processes. The Australian Natural Heritage Charter sets out the principles, processes and standards for the conservation of natural heritage places including geodiversity. It defines geodiversity as the range of earth features including geological, geomorphological, palaeontological, soil, hydrological and atmospheric features, systems and earth processes.

Tasmania – ‘State of the Environment’ and others

<http://www.rpdc.tas.gov.au/soer/lan/2/issue/77/ataglance.php>

Geodiversity is the natural diversity of geological, landform and soil features, and processes. Geoconservation is 'the conservation of geodiversity for its intrinsic, ecological and (geo)heritage values' (Eberhard 1997). Geoconservation is complementary to biological conservation ('bioconservation') in that it seeks to conserve the non-living aspects of the natural environment, as an integral part of a balanced approach to nature conservation.

(Eberhard, R. 1997, *Pattern and Process: Towards a Regional Approach to National Estate Assessment of Geodiversity*, Technical Series No. 2, Australian Heritage Commission & Environment Forest Taskforce, Environment Australia, Canberra.)

<http://www.rpdc.tas.gov.au/soer/lan/2/issue/77/index.php>

Geodiversity is the natural diversity of geological, landform and soil features, and processes (Eberhard 1997). Geodiversity is just as important a part of the Earth's natural heritage as biodiversity, and is also the essential foundation for biodiversity (see [geodiversity and geoconservation in Tasmania](#) on the [DPIWE](#) website).

DPIW - Department of Primary Industries, Water and Environment

<http://www.dpiwe.tas.gov.au/inter.nsf/WebPages/SJON-57W4FD?open>

Geoconservation aims to preserve the natural diversity of our non-living environment (our geodiversity).

<http://www.nrmtas.com.au/NewFiles/nthsupportdocs/dpiwe%20tech%20papers/Geo%20North.pdf>

Geoconservation has been defined simply as the conservation of geodiversity or as identification and conservation of geological (hard rock), geomorphological (landform) and soil features, assemblages and processes for their intrinsic, ecological or heritage values.