# Geotourism characteristics of 'experiential tourism', geosites, and enhancing public appreciation of earth sciences.

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## Abstract

Geotourism is a form of natural area tourism that can and should focus on geology and landscape. It promotes tourism to geosites and the conservation of geo-diversity and an understanding of earth sciences through appreciation and learning. This is achieved through independent visits to geological features, use of geo-trails and view points, guided tours, geo-activities and patronage of geosite visitor centres. The character of geotourism is such that it is geologically based and can occur in natural, rural or urban environments. It fosters geoheritage conservation through appropriate sustainability measures and it advances sound geological understanding through interpretation. Tourists, seeking to have the natural environment interpreted for them, can expect explanations of geology as well as flora and fauna, creating a more holistic view of ecosystems. Geotourism has great potential as a new niche 'nature-based' product, but will require the same disciplines that apply to other niche, 'high value-added' tourism activities. The incorporation of the geotourism experience with traditional nature-based tourism and elements of cultural tourism represents a further move towards the 'experiential tourism' model.

## Preamble

Given Australia's heavy reliance on the expertise of geologists and the exploitation of natural resources for wealth creation, it would be logical to assume that the interpretation of geology and landscape feature extensively in the character of Australia's 'nature-based' tourism industry, by default yes, but without any meaningful substance and context offered for both tourists and the nation's inhabitants.

From the perspective of earth science (geoscience) education, educators have observed that children generally become first interested in geology at a very early age, but because of the lack of teaching resources and geoscience teachers, this natural interest often wanes, and it is not rekindled at a later age when decisions need to be made about selecting career paths (Stutchbury 1988, Robinson 1989).

For a brief period during the 1990s, Australia's first 'exploratory' earth science museum, which was located in Sydney, employed innovative interpretation techniques to capture the imagination of young people. The Earth Exchange's closure in 1995, through the withdrawal of government funding, represented a major blow to the furtherance of geoscience education.

Geotourism is at a very stage of development in Australia, and with its wide range of interested publics may provide a valuable avenue to service both the needs of tourists and to provide an alternative (and outdoor) geoscience education experience for Australians of all ages.

## Nature of Geotourism

### Natural Heritage and Geoheritage

Natural heritage is the legacy of natural objects and intangible attributes encompassing the countryside and natural environment, including flora and fauna, scientifically known as biodiversity; as well as landforms, bedrock (geology) and soils, i.e. geodiversity.

Geoheritage is exemplified by geological heritage sites which are places which enable us to understand the composition of the earth, the internal and external processes that have shaped it and the evolving flora and fauna that occupied it (White 2010).

Scenery depends on land structure - in other words, its geology. Everyone interested in the countryside, how it has taken shape, why it presents us with the varied beauties of mountain and woodland, river valleys and fertile meadows, is, if often unconsciously, appreciating its geology (Trueman 1938).

### Geology, Geomorphology, and Soil Landscapes

Geology is the study of the Earth as a whole, its origin, its structure, composition, and history (including the development of life), and the nature of the processes which have given rise to its present state. Of the five principal branches of geology, physical geology (including geomorphology) includes the study of the processes affecting the Earth. Geomorphology is defined as the description and interpretation of landforms (Whitten D G A with Brooks J R V 1972).

Soil landscape descriptions document and interpret the diversity of landform elements within a mapped unit and their related soil variability (Atkinson 2010).

### Ecotourism

Tourism is in its simplest form, travel for pleasure, but ecotourism is ecologically sustainable tourism with a primary focus on experiencing natural areas that fosters environmental and cultural understanding, appreciation and conservation.

Ecotourism began with small groups traveling to relatively undisturbed areas, appreciating natural scenery and traditional cultures.

World tourism has become an immense global industry, with an impact related to its size. Now ecotourism is increasingly seen as part of world tourism. Governments and the tourism industry are using ‘ecotourism’ as a brand for ‘good’ or ‘green’ or ‘sustainable’ tourism, although at times all seem oblivious of its original objectives.

The downside of the mainstreaming of ecotourism is that the activity itself may progressively destroy the very values that appeal to the ecotourist. This is a continuing problem, particularly now as the greatest impact of mass ecotourism is falling on the most fragile of environments.

To address this situation, the peak Australian industry association, Ecotourism Australia Ltd, manages a certification scheme to provide industry, protected area managers, local communities and travellers with an assurance that a certified product is backed by a commitment to best practice ecological sustainability, natural area management and the provision of quality ecotourism experiences.

### Geotourism – The Broad Definition

According to the National Geographic Society and the Travel Industry of America, geotourism is ‘best practice’ tourism that sustains, or even enhances, the geographical character of a place, such as its culture, environment, heritage, and the well-being of its residents (Stokes, Cook, &

Drew 2003).

Like ecotourism, geotourism promotes a virtuous circle whereby tourism revenues provide a local incentive to protect what tourists are coming to see, but extends the principle beyond nature and ecology to incorporate all characteristics that contribute to sense of place. Geotourism incorporates sustainability principles, but in addition to the 'do-no-harm' ethic, geotourism focuses on the place as a whole.

Geotourism has the same objectives as ecotourism, but particularly seeks to explain the beauty and origins of the Earth - all landscapes, landforms, plants and animals – *Geologica* as described by Coenraads & Koivula 2007. Geotourism complements scenic beauty with revelations of how they were formed. 'Geotourists' see this additional information as doubling the value of a tour (Robinson 2008).

If implemented correctly, geotourism can benefit all aspects of the destination and become a term that is synonymous with truly sustainable tourism because it enhances all aspects of the destination (Boley 2006).

In the USA, for example, geotourism has been practiced for well over 100 years, with iconic geological sites such as the Grand Canyon (figure 1) and Yellowstone National Parks being highly visited and appreciated by American citizens and overseas visitors alike.

*Figure 1: 'Geotourists' interpreting the geology and geomorphology of the Grand Canyon, USA. Photo: Grand Canyon Skywalk.*

## Geotourism for Geologists!

Geotourism is the provision of interpretive and service facilities to enable tourists to acquire knowledge and understanding of the geology and geomorphology of a site (including its contribution to the development of the earth sciences) beyond the level of mere aesthetic appreciation (Hose 1995).

Dowling 2010 (pers commun) has defined geotourism as a form of natural area tourism that specifically focuses on geology and landscape. It promotes tourism to geosites and the conservation of geo-diversity and an understanding of earth sciences through appreciation and learning. This is achieved through independent visits to geological features, the use of geo-trails (itinerary driven tours which link geosites, view points e.g. Echo Point, Blue Mountains (Pickett & Alder 1997), guided tours, geo-activities (e.g. gold panning or fossil collection) and the patronage of geosite visitor centres, within a range of natural areas including geoparks (Dowling & Newsome 2006) and paleoparks (Percival 2010).

Dowling has suggested that the characteristics then of geotourism are:

1. It is geologically based and can occur in natural, rural or urban environments.
2. Fosters geoheritage conservation through appropriate sustainability measures.
3. Advances sound geological understanding through interpretation and education.
4. Generates tourist or visitor satisfaction

Robinson 2010 has argued that the National Geographic Society adopted definition of geotourism should be amended to include specific reference to geology and geomorphology.

## ‘Geotours’ to a diversity of destinations including geosites

Geotours can visit a wide diversity of sites. Tourists, seeking to have the natural environment interpreted for them, can expect explanations of geology as well as flora and fauna, creating a holistic view of ecosystems. This enhances their support for the conservation of ecosystems for future generations.

A significant feature of geotourism is that it does not require untouched landscapes as its playground. A great tour can equally be delivered on a quarry floor, in a historic mining area, on roads in a national park, or in total wilderness. Geological processes can also be interpreted in rock outcrops at geo-sites comprising coastal cliffs, creeks, road cuttings, lookouts, quarries, and through walks in national parks. Most of these are erosional sites, none need to be ecologically challenged. All that is needed is some fascinating geology, and a knowledgeable interpreter (Robinson & Roots 2008).

However, there needs to be attention to geoheritage responsibilities, particularly when geotourism operators are making use of geosites rich in appealing fossils and ‘pretty minerals’ (Yeung & Ritchie 2010).

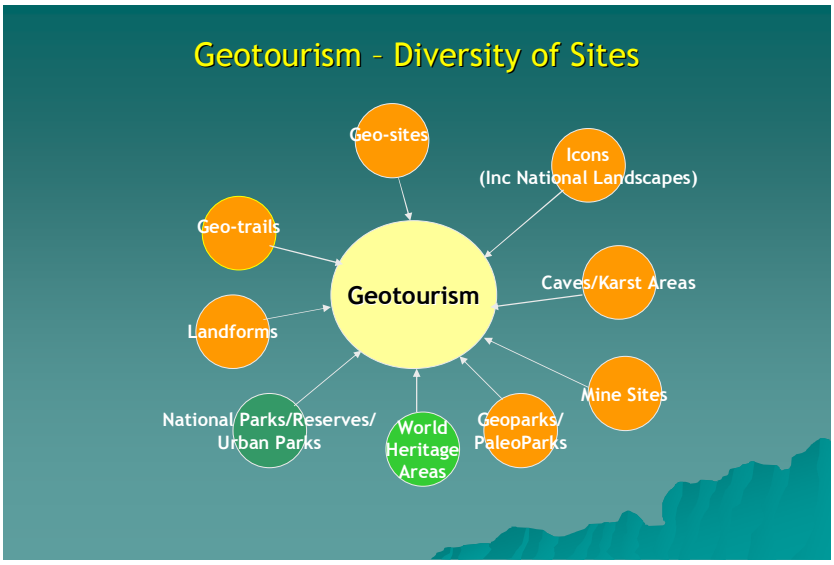


*Figure 2: Diversity of geotourism sites.*

By diluting the mainly biological/cultural emphasis of mainstream ecotourism, a new focus on landform and geological interpretation, will enable tourists to extend their activities away from (in part) environmentally sensitive areas.

The quality of the tour information provided either prior to or during the 'geotour' is a key component of achieving high assurance performance for the overall customer service experience. Given the technical nature of the geotourism experience, care needs to be taken to ensure that the interpretation delivered is clear and understandable – the museum dictate of ensuring that information presented needs to be pitched at a lower secondary school level should not be overlooked (Robinson & Flett 1989), whilst understanding that some more technically literate tour participants will be expecting access to more detailed knowledge and text. Hence, resources will need to be developed to researching both the availability of scholarly reports and translating these into material more suitable for general reading and understanding.

Similarly, the selection and training of tour guides is important. Whilst knowledge is one important attribute, tour guides need to be excellent communicators with interpretation skills attuned to some degree of entertainment and assuring the 'day to day' human needs of the individuals in their groups are well met.

For example, in the Scenic Rim area of South East Queensland, a geologist with an extensive background in the resources sector - Dr John Jackson ('The Rock Doctor') employs art and an ability to explain geology and landscape in a language that people can easily understand, thus providing excitement and interest in the overall geotourism experience (figure 3).

*Figure 3: The 'Rock Doctor' at work on a Country Charm™ Discovery Tour in the Scenic Rim region, SE Queensland. Photo: Angus M Robinson*

Taking a different approach, Bob and Nancy's Geological Tour Site (http://ozgeotours.110mb.com) is a web based source of freely downloadable geological and landform tours. Over 20 tours have been developed for the public by geologists, Bob Brown, Dr Nancy Vickery, and Adjunct Professor Paul Ashley of UNE, with a minimum of geoscientific jargon and stratigraphic names (Brown 2010).

In Ulladulla on the NSW South Coast, retired geologist, Phil Smart, supported by the local community, Shoalhaven City Council, and Geoscience Australia is currently expanding an existing guided fossil walk project on coastal rock platforms to embrace other innovative interpretation techniques (including a rock garden in a harbourside park and a 3D

geological/terrain model of the region which incorporates the well-known Pigeonhouse Mountain landmark). This project is now being branded as the 'Gondwana Coast' (Smart 2010).

## Sustainable Geotourism

Pforr & Megerle 2006 have cited work by Buckley & Lang 2003 that defines geotourism as the intersection of nature-based tourism focusing on geo-objects and sustainable development. They see geotourism in the context not only of a new market segment but also as a 'normative direction contributing to geo-conservation and sustainable development'. The authors also cite Megerle & Megerle 2002 who suggest that geotourism should be viewed as part of a holistic management approach to the broad field of geological and landscape history including its interconnectedness with flora and fauna, the cultivated landscape, and present land use. They see sustainability and environmental education as integral parts.

From another perspective, geotourism is ecologically sustainable tourism that explains the scenery in terms of how geological processes formed the patterns that can be observed in landforms in a plethora of landscapes such as mountains, deserts, and islands as well as in karst landforms and caves (DECCW 2010).

## 'Experiential Tourism'

The incorporation of the geotourism experience with traditional nature tourism and elements of cultural tourism creates a more holistic experience, and is a move towards the 'experiential tourism' model (figure 4). In short, 'experiential tourists seek memorable experiences' (Smith 2006).

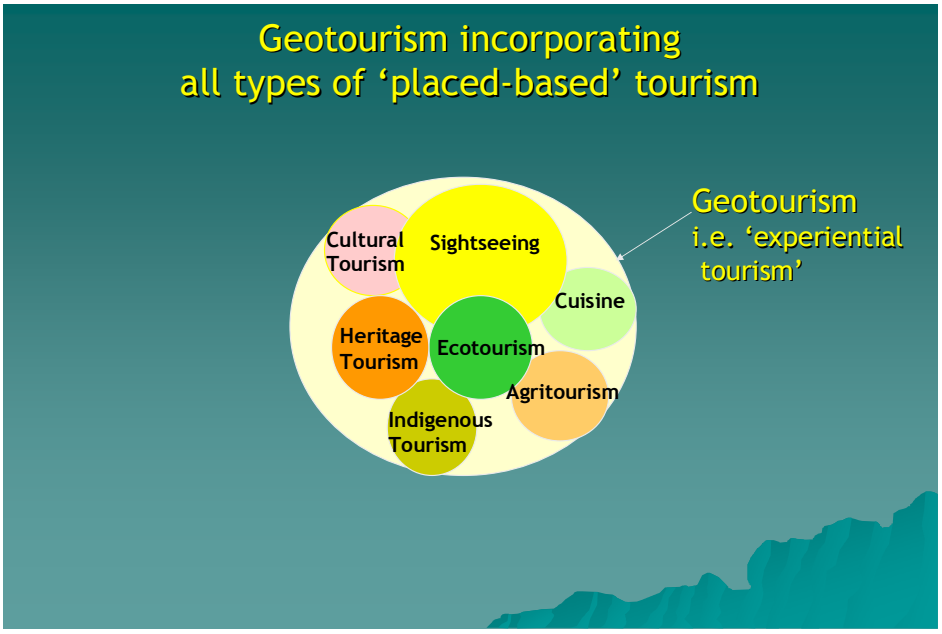


*Figure 4: Geotourism – a form of 'experiential tourism' (Boley after Thompson 2009).*

## Cultural tourism aspects of geotourism

Within the holistic package offered to the 'experiential' tourist, as well as the nature-based and geological components, can be added the following cultural activities (Hossain Heaney & Carter 2005):

- Attending theatre, concerts or other performing arts.

- Visiting museums or art galleries.
- Visiting art/craft workshops/studios.
- Attending festivals/fairs or cultural events.
- Experiencing Aboriginal art/craft and cultural displays.
- Visiting an Aboriginal site/community.
- Visiting history/heritage buildings, sites or monuments.

Hossain et al recognise that it is important to appreciate that the activities-based definition of cultural tourists is not mutually exclusive of other interests e.g. a cultural tourist can also be a wine tourist or a 'nature-based' tourist.

In the Australian setting, cultural experiences can be delivered in collaboration with a wide range of community and special interest groups e.g. National Trust of Australia.

## Australia's National Landscape Program

'Experiential tourism' has been captured in the Australia's National Landscapes program (a partnership of Tourism Australia and Parks Australia), where visitors can experience the best of Australia's natural, cultural and spiritual wonders – to be known as 'Experiencescapes.' These are world-class landscapes distinctive to Australia.

Rich with diverse and immersive experiences and a range of accommodation options unique to each destination, the National Landscapes program currently include the following 10 regions viz. Australian Alps (New South Wales/Victoria), Australia's Green Cauldron (New South Wales/SE Queensland border region) – figure 5, Australia's Red Centre (Northern Territory), Australia's Coastal Wilderness (New South Wales/Victoria), the Flinders Ranges (South Australia), Kangaroo Island (South Australia). the Great Ocean Road (Victoria), the Greater Blue Mountains (New South Wales), the Kimberley (Western Australia), and West Arnhem/Kakadu/Nitmiluk (Northern Territory).

Four other regions are also under active consideration viz. Ningaloo-Shark Bay (Western Australia), South Coast (Western Australia), the island of Tasmania, and the Great Barrier Reef (Queensland). Two other areas (i.e. Sydney Harbour and the Wet Tropics area of North Queensland) have been nominated for discussion.

*Figure 5: Mt Barney, Scenic Rim region, SE Qld, Australia's Green Cauldron National Landscape. Photo: Angus M Robinson*

## Geotourism, geotourists and employment opportunities in the tourism industry

Having regard to a wide range of demographic and lifestyle considerations, it is hoped that geotourism, if positioned and marketed as a holistic, knowledge-adding product incorporating an attractive ecotourism experience, will attract a range of professional interest groups with a natural interest in landscape e.g. geographers, geomorphologists, geoscientists, and speleologists, as well as their partners and friends, particularly through alumni and professional societies.

Secondary teachers in Australia who specialise in either earth or environmental sciences or in geography streams of 'society and environmental studies' may also have an interest in geotourism.

This potential market size could be expanded by considering accessing the alumni of universities. Some 22 of the 38 Australian tertiary institutions teach earth sciences, natural or environmental courses (available at http://www.gsa.org.au/resources/careers.html). All of these institutions have affiliated alumni programs. To this can be added the alumni of friends groups associated with cultural institutions committed to natural history e.g. the Australian Museum, Western Australian Museum, South Australian Museum etc.

Given the relatively small size of the Australian 'geoscience interest' market, content packaging will be critical. To address this issue, Leisure Solutions® and the School of Marketing, Tourism & Leisure at Edith Cowan University have recently undertaken a market research project of members of the Geological Society of Australia (Mao, Robinson, & Dowling 2009). Of the conclusions reached from this study, the most important purposes for respondents were, inter alia;

- increasing knowledge of geological sites and landforms;
- to satisfy curiosity; to have a memorable experience;
- to obtain intellectual stimulation; and
- visiting destinations offering a unique bundle of features such as ecology, experience of different cultures and history by satisfying their curiosity.

Female respondents placed a higher level of importance on visiting destinations offering a unique bundle of these features.

Nevertheless, it should not be forgotten that in the wider community, other 'alumni' groupings such the medical profession and engineers represent a potential customer base. Bushwalking groups should also be considered.

Having regard to the emergence of geotourism as an increasing driver of both domestic and overseas tourism for Australia, there is no doubt that the future offers new and stimulating avenues of employment for geoscience graduates, who to date have relied on the vagaries of mining industry employment or for careers in government laboratories, universities and museums.

## Conclusions

1. Geotourism is 'best practice' tourism that sustains, or even enhances, the geographical character of a place, such as its culture, environment, heritage, and the well-being of its residents, as well as interpreting its landscapes and its geology. The holistic geotourism experience represents a further move towards the 'experiential tourism' model.
2. Introducing a 'geo' component to traditional ecotours can broaden the range of locations open to such tours. This in turn will relieve stress on the most sensitive areas, whilst allowing an increase in tourist numbers.

3. Having regard to sustainable geotourism imperatives, steps are needed to include geoheritage protection measures in those eco-certification schemes which are being utilised by responsible tour operators in the mainstream ecotourism industry.
4. Geology and landscapes can be readily interpreted by professionally trained guides if innovative communication techniques are employed which people of all ages can readily understand.
5. The opportunity exists for geoscience-related, professional societies to take a lead role in nurturing the development of geotours, both domestically and globally for their members.
6. There is a pressing need for professional societies, working in close association with tourism operators and land managers, to lobby for the inclusion of geology, geomorphology and soil landscape interpretation within the wide range of 'land designation' systems at play in Australia. These can include world heritage areas, national and urban parks, and the regions designated with 'National Landscape' program status.
7. Geotourism can also assist in re-educating society and environment/science teachers in pleasant (non-classroom) environments, adding field experience often lacking, possibly also offering them additional qualifications to assist advancement in their profession.
8. Courses in geotourism can provide school and university teachers in the physical sciences/environmental sciences with alternative career paths, providing re-training opportunities for teaching and potentially for a rewarding, part-time and paid retirement occupation. These courses could also be available to geologists who are seeking alternative career paths to the traditional employment opportunities offered by the mining and exploration industries.

## References


Atkinson, G 2010, *Mapping diversity using soil landscape maps*, p 5 in Percival, I.G. (editor). Symposium on Geodiversity, Geological Heritage and Geotourism – Sea Acres, Port Macquarie, September 2010: Program, Abstracts and Field Guide, Linnean Society of NSW, Sydney.

Boley, B B 2010, *Geotourism in the crown of the continent: developing and testing the Geotourism Survey Instrument (GSI*), MSc Thesis, University of Montana, May 2009.

Brown, R E 2010, *Geology to the masses: geotours via the web*, p 7 in Percival, I.G. (editor). Symposium on Geodiversity, Geological Heritage and Geotourism – Sea Acres, Port Macquarie, September 2010: Program, Abstracts and Field Guide. Linnean Society of NSW, Sydney.

Buckley, R 2003, *Environmental inputs and outputs in ecotourism; geotourism with a positive triple line?* Journal of Ecotourism, 2(1), pp 76-82.

Coenraads, Robert R & Koivula, John I 2007, *Geologica*, Penguin Group (Australia), Melbourne.

DECCW, 2010, *Guide to New South Wales Karst and Caves*, compiled by S Meehan, Department of Environment, Climate Change and Water NSW.

Dowling, R K & Newsome, D 2006, *Geotourism*, Elsevier, Oxford.

Hossain, A, Heaney, L & Carter, P 2005, *Cultural tourism in regions of Australia*, Tourism Research Australia, Canberra.

Hose, T A 1995. *Selling the story of Britain's stone*. Environmental Interpretation, 10(2), 16-17.

Lang, R 2003, *Geotourismus and Geotopschultz in Rheinland-Pfalz*, Landesamat für Geologie und Bergbau Rheinland-Pfalz.

Mao, I, Robinson, A M & Dowling, R K 2009, *Potential geotourists: an Australian case study*, Journal of Tourism X (1): 71-80.

Megerle, A & Megerle H 2002, *Geotourism? Geotourism!* Attempto, 13, pp 16-17.

Percival, I G 2010, Palaeontological geoheritage in Australia: is the paleopark concept the solution to combining preservation and education? pp 17-18 in Percival, I G (editor), Symposium on Geodiversity, Geological Heritage and Geotourism – Sea Acres, Port Macquarie, September 2010: Program, Abstracts and Field Guide, Linnean Society of NSW, Sydney.

Pforr, C & Megerle, A. 2006,. *Geotourism: a perspective from Southwest Germany*, Geotourism, Elsevier, Oxford, pp 120-121.

Robinson, A M 1989, *Museums, the mining sciences and public education*, Proceedings of The AusIMM Annual Conference, pp 49-57.

Robinson, A M & Flett, T 1989, *The design of a visual language for the Geological and Mining Museum*, Museums Association of Australia Inc, Victorian Branch, Annual Conference papers, pp 145-150.
Robinson, Angus M & Roots, David 2008, *Marketing geotourism sustainably*, Inaugural Global Geotourism Conference, Fremantle, WA, August 2008, pp 303-317.
Robinson, Angus M 2008, *Geotourism: Who is a geotourist?* Inaugural National Conference on Green Travel, Climate Change and Ecotourism, November 2008 (unpubl).
Robinson, Angus M 2010, *Australian geotourism – current challenges and future opportunities,* p 19 in Percival, I G (editor), Symposium on Geodiversity, Geological Heritage and Geotourism – Sea Acres, Port Macquarie, September 2010: Program, Abstracts and Field Guide, Linnean Society of NSW, Sydney.
Smart, P 2010, *The Ulladulla rock platforms and their geological tourism potential*, pp 21-22 in Percival, I G (editor), Symposium on Geodiversity, Geological Heritage and Geotourism – Sea Acres, Port Macquarie, September 2010: Program, Abstracts and Field Guide, Linnean Society of NSW, Sydney.
Pickett, J W & Alder, J D 1997, *Layers of time: the Blue Mountains and their geology*, New South Wales Department of Mineral Resources, Sydney, 34 pp.
Smith, William L 2006, *Experiential tourism around the world: definitions and standards*, International Journal of Services and Standards 2006, Vol 2, No 1, pp 1-14.
Stokes, A M, Cook, S D, & Drew, D 2003, *Geotourism: the new trend in travel,* Travel Industry America and National Geographic Traveler.
Stutchbury, R 1988,*. Why geology is not discussed in the community,* The place of geoscience in Australian education, The Mining Review, November, 1988: 33-35.
Trueman, A E 1938, *Geology and scenery in England and Wales*, Penguin Books, Harmondsworth, Middlesex.
White, S 2010, *Geoheritage, geotourism, geoconservation – similarities and differences – some definitions*, Workshop, Australian Earth Sciences Convention 2010 (unpubl).
Whitten, D G A with Brooks J R V 1972, *The Penguin Dictionary of Geology*.
Yeung, M & Ritchie, A 2010, *Is geotourism a threat to geoheritage?*, pp 25-26 in Percival, I G (editor), Symposium on Geodiversity, Geological Heritage and Geotourism – Sea Acres, Port Macquarie, September 2010: Program, Abstracts and Field Guide, Linnean Society of NSW, Sydney.