

A Philosophy of Cave Conservation

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Conservation is the optimum sustained use of natural resources; therefore, cave conservation must provide not only for the protection of the character, decoration and biota of caves, but also for the means whereby people might enjoy and understand the caves that are their heritage.

A cave is a natural subterranean cavity into which a man can enter to a point where daylight cannot be seen.

Caves are not only interesting physical entities that provide distinctive sensory and perceptual experiences and invoke a variety of responses, but they also provide unique opportunities for scientific study. Speleology is the study of caves, and in New Zealand it attracts workers from many disciplines of the universities and government research establishments.

A caver is a person who visits or explores caves as a hobby. A speleologist studies caves and their contents and records the findings.

Observations show that caves change, and that the rock, water and air are in a state of delicate physical balance. Caves are the habitat of animal species, some of which are never seen on the surface, and their need for sanctuary must not be overlooked.

The evidence of man's prehistoric use of caves must be properly recorded as a valuable part of archaeology, and the inclusion in cave deposits of the skeletons of extinct flightless birds, has added to our knowledge of these species.

A cave is, in a broad sense, a recreational resource, that is, one of the means of

Les Kermode

supplying the want of modern urbanised man to refresh his mind by relaxation and by participation in a substantially different experience that has no economic significance of its own.

Today there are ever-increasing pressures on all types of recreational areas, because more people have more leisure time.

Better roads make it easier for thousands of urban dwellers to visit remote areas, and the world-wide boom in travel brings many foreign visitors to our tourist attractions.

A commercial cave is defined as a cave that is accessible and open to the public at specified times. It has an administration that is responsible for cave protection and for visitor safety, and the tours - whether guided or self-guided - include explanations.

There are hundreds of beautiful and interesting limestone caves in New Zealand, but although about 8 per cent of the land is set aside as National Parks so that the public might always enjoy the beautiful and unique features, only Fiordland National Park contains a tourist cave.

The inclusion of Te Ana- in that park was only an accident, and not an administrative decision by people who felt strongly about our beautiful caves. A further 1 per cent of the land is set aside as scenic reserves and these smaller areas contain many limestone caves, including the three Government operated caves at Waitomo. Information is being gathered for future proposed protection, acquisition, or development of some of the more outstanding caves.

Many New Zealanders know more about the surface of the moon than about the nature of a cave, and many landowners know that vertical caves are a menace to animals and a convenient dump for old carcasses. Speleologists must inform people

about caves, and also point out that they are a delicate natural resource of potential recreational, scientific and commercial interest.

Sometimes the lure of mystery and adventure has to be revealed upon to entice people underground, but carefully planned commercialisation of a beautiful and interesting cave will bring pleasure to thousands of visitors and reduce the possibility of defacement by unthinking and unisciplined persons in an uncontrolled cave. Some caves have been completely stripped of almost every mineral decoration by vandals and rock-hounds.

For conservation reasons it is not advisable to publish the precise locations of unprotected caves. It is also an unfortunate fact that cavers do more damage to more caves than most visitors do to tourist caves in a century. In terms of the human time scale the careless defacement of cave decoration or character is very difficult to restore.

Commercial development of a cave must be not only for recreation, but also for success. An ill-conceived venture might be a disservice rather than a benefit and destroy the objectives that it set out to achieve. Most major tourist caves of the world are Government controlled because it would be too expensive for private enterprise to attempt to develop large caves on a realistic investment-return formula. Also, a spectacular cave is a natural phenomenon that should not be owned by an individual, nor should the resort be operated as a commercial monopoly.

Conservation of a cave, in conjunction with its commercial use for tourism, can be achieved if three points are remembered:

- a. The natural character of the cave must not be lost in the development.
- b. The ecology of the distinctive fauna must be assured.

c. The recreational value of the cave tour must not be lost by crowding with too many visitors.

Public Interest in Commercial Caves

There are many reasons for persons visiting commercial caves, but two broad groups are easily recognised. To a bus load of "Package-deal" tourists a cave is yet another stop to be added to their long itinerary of places that they have visited.

Many of them have no real interest in the cave apart from getting out of the sight of daylight and returning as quickly and safely as possible. To other visitors a cave is a genuinely new and mysterious world which they have been unable to visit as a caver or speleologist, but they are interested enough to overcome their fears and to find out for themselves what a cave is really like. A third possible minor group are those who feel a compulsion to visit a cave as a symbolic or psychic experience.

Experiences associated with a cave visit

Although a visitor to a commercial cave is denied much of the organisational involvement and excitement that is an essential part of an expedition to an unexplored cave, he is involved in the personal activity of inspecting an enclosing physical environment that is substantially different from anything on the surface of the earth.

Visits to places of difficult access tend to inspire mystical experiences - the straining of the body, the achieving of a goal, the feeling of solitude and unity with the earth, the opportunity for rest and reflection - of being at peace, with something beyond oneself.

In a cave the absolute darkness, the deathly silence, and the removal of familiar every-day things enhance these experiences and make the cave visitor aware of his dependence on his companions and upon himself. Camaraderie and antagonisms can be boldly highlighted.

A cave visit also produces emotional experiences. The lure of the unseen and the unknown is contrasted with the fear of not remembering the route out, or the fear of being cut off by a sudden flood or roof collapse. The exhilaration of walking and climbing is complemented by the physical struggles, the cold, the wet, and the mud. The excitement of discovering a sparkling, white chamber is balanced against the hours of seeing only dull, uninteresting rock and mud.

Finally, the pleasure and relief of a safe return to daylight from a remote, alien and timeless world, is inextricably mixed with tiredness or exhaustion from the adventure.

The challenge of logically piecing together the numerous observations and the deduction of relationships between the seen and the unseen lead to the intellectual contemplation of the origins and nature of the cave and its life, and of the future of the things now visible.

Visually the most awe-inspiring experience is the utter darkness when lights are turned out, or are inadequate to penetrate the distance. In New Zealand many caves are never completely dark because of the cheering blue lights of glowworms which can be bright enough to silhouette shapes or illuminate light coloured areas

Les Kermode

like faces, and collectively make an unforgettable spectacle.

With adequate lights the unusual rock shapes, the delicate calcite and gypsum decorations, the shadows cast by moving lights, the sparkle of crystals, the various mineral colours, and the unexpected tiny living things all excite the visual imagination.

Conversely, smashed stalactites are detracting, and the sight of human litter or contrivances associated with extravagant or tasteless presentation in a commercial cave is unforgivable.

Aurally the negative experience of silence can be profound, and the boat ride in Glowworm Grotto is greatly enhanced by the visitors remaining silent. If silence is prolonged while one is alone in complete darkness it can become terrifying. The shape of a chamber or the texture of its walls can produce a complete lack of echo. Within the confines of a chamber the dripping of water, the babble of a stream, or the thunder of a waterfall, each produce aural impressions that are stimulating. By contrast, the introduction of unnatural sound or inappropriate recorded music in a commercial cave can be offensive.

Tactual experience of a commercial cave is usually denied to the visitors. Intimate contact with hard rock, wet surfaces, soft mud, smooth calcite or rough limestone should be available, in the appropriate places, to all cave visitors. However, the fragility of delicate stalactites should not be experimented with by every visitor. The sense of being confined within definite solid limits is very real and makes some cave visitors fearful.

The odour of dank, musty cave deposits is distinctive and should not be displaced by the stale smell of human breath and perspiration. Commercial caves should not be allowed to be polluted by the wafting odours of food, nor by the

nauseating smell of rotting animal carcasses, human urine or excrement, nor by petrol or oil fumes.

Taste is the only faculty that is not distinctively stimulated by a cave visit. Groundwater enriched with calcium carbonate is common to all springs and streams in limestone terrain.

Within a cave a feeling of clamminess is quickly noticed. This is produced by the almost saturated humid atmosphere affecting perspiration rates during physical activity. If excess carbon dioxide is present, a feeling of suffocation might be experienced. The almost constant temperature of a cave makes it feel cool in summer and warm in winter. Air currents can sometimes be felt and they add to the mystery of a cave.

General Development Requirements for Commercial Caves.

Environs: One of the most valuable assets a potential tourist cave can have is a favourable location near a population centre, but this is not always possible because of the rugged nature of limestone landscape (karst). A cave must be rare or unique to attract visitors away from main routes. Important caves should be protected within Crown reserves which should adequately cover the land surface and natural vegetation above and around the cave.

Approach: A visit to a cave should be both educational and dramatic. The entrance is an important feature of any cave, and this should be preserved without too much modification. The interior of a cave is often judged by the visitor, before

he even enters, by the appearance of the buildings.

Planning of surface facilities must consider preservation and protection of the cave below - vegetation, soil, and drainage must not be disturbed. Waste disposal from buildings and pavements must be strictly controlled. Caves become dead and dusty after natural vegetation has been stripped and natural percolation drainage changed. Even reforestation with pines could be detrimental to the drainage and therefore to the deposition of calcite.

Changes in humidity caused by artificial tunnels and shafts cause dustiness, and doors should be installed at such points. Obviously adequate facilities like carpark, waiting hall, restaurant, snack-bar, toilets, interpretative displays, etc., must be provided by the controlling authority.

Paths: Paving the floor makes it convenient for the visitor, but destroys some of the natural aspects of the cave, such as rimstone, flowstone, cave pearls, and crystal pools.

Grouping areas where the guide can explain features of the cave are necessary. There should be easy access for maintenance and construction materials and for servicing. The superintendent of the construction work must guard against the destruction of features of the caves he is intending to display. Hand labour cannot be eliminated. Retaining walls, abutments and handrails should enhance the cave. Gradients should allow for comfortable walking, but some steep narrow or low passages add to the sense of adventure.

For most of the length of the pathways there should be headroom of about 2m, and a width wherever possible of at least 1.2m. Paths should resist flood waters, and be built to a high standard of safety, e.g., non-corrosive coatings on metal and

non-skid surfaces on concrete or asphalt. Wood should be used sparingly, and if gravel paths are necessary they should have shoulders to prevent the stones scattering.

Lighting: This must show the caves dimensions and decorations to dramatic and educational advantage. Scientific measurements of light absorption and reflection should be made before installations are finalised, fo that extraneous plant growth is not encouraged.

Lights should be low and accessible, but never visible to the visitors. Visitors will not always travel in one direction so lights can not be directed from behind. There could be special night time illumination of the entrance or special boat tours on nights near the full moon. Underwater lights or under-path lights can be used. The gradual illumination of big chambers, or sequential lighting of a seres of features can be very effective, if not overdone.

Guides: One of the most important factors in a cave tour is the excellence of the guide. His confidence and enthusiasm directly influence the enjoyment and understanding of the whole party of visitors who should feel that they are being shepherded, by someone who cares about them and the cave, rather than scrambling, sliding and splashing through the cave in pursuit of the guide. He must never show boredom, and a sense of humour is necessary.

Information given by guides is accepted without question, and he must be authoritative and backed by the management who should be responsible to see that errors, misinformation, and old wives' tales are not passed on to the public. The ill-informed, unsympathetic and disinterested guide can make a superb cave seem

Les Kermode

dreary and unpleasant, while an informed, articulate and enthusiastic guide can make even a moderately interesting cave an adventure.

Guides must be heard above other sounds of river, wind, voices, shuffling feet, etc. Information pamphlets must be available (to bona fide overseas visitors) in several languages, and portable tape recorders with cassettes of recorded commentaries (Japanese, French, German, Spanish, etc) should be carried by the guides. A cave of restricted size requires small parties, and if facilities within the cave are restricted in size it would improve the quality of the tours considerably if the party with each guide was limited to that number.