

# Using Interpretation to Manage Nature-based Tourism

*Mark B. Orams*

*Department of Management Systems, Massey University, Albany, Private Bag 102 904, North Shore MSC, Auckland, New Zealand*

Tourist use of the natural environment has continued to increase rapidly. This has resulted in many authors expressing concern over the impact of this increasing use. This paper briefly reviews these concerns and outlines the general types of management responses to increasing tourist pressure on the natural environment. One type of management response lies in educating tourists and this paper argues that this can be an effective means of reducing negative impacts. A number of important educational techniques which can be used in an interpretation programme for 'ecotourists' is outlined and their use and assessment is advocated.

## Introduction

Many authors argue that environmental interpretation is an effective and desirable means of managing tourist use of natural resources (Beckmann, 1988; Forestell, 1990). However, despite this apparent widespread acceptance of the value of educating recreational users of the natural environment, there is little research which quantifies the specific benefits of interpretation programmes. Such data would provide a stronger case for the support of environmental education within its traditional realm of schools and public sector resource management agencies and also for its extension to private sector tourist operations. This paper considers the rapid growth of nature-based tourism and outlines concerns being expressed over the impacts of this industry. Arguments for interpretation-based management strategies are offered and several specific educational techniques are outlined. The paper concludes by specifying questions which are worthy of empirical research in the area of tourism management.

## Nature-based Tourism

Tourism has been identified as one of the largest and fastest growing industries in the world (Miller, 1990). In particular, the recent growth of nature-based or 'ecotourism' has been singled out as the single most important contributor to that growth (Ratnapala, 1992; MacDonald, 1992). There are a diverse range of definitions given to the term 'ecotourism' (Orams, 1995); however, one of the most ambitious is that given by Valentine (1992: 5) who argues that ecotourism should be restricted to that kind of tourism which is:

- (a) based upon relatively undisturbed natural areas;
- (b) non-damaging, non-degrading;
- (c) a direct contributor to the continued protection and management of the areas used; and
- (d) subject to an adequate and appropriate management regime.

The private sector is responding to the changing market and an increasing number of tourist resorts are utilising nature-based attractions to lure visitors to their facilities. It does seem, however, that both private sector tourist organisations and government sector resource management/protection agencies have the same overall goal, that is, to allow (or promote) appropriate recreational and tourist use of the natural environment while protecting that environment from degradation.

As a result of this rapidly increasing use and the desire to protect resources, a number of leading authors in the field are arguing for research in the nature-based tourism area. For example, Boo (1990: 4) states that:

Despite rising expectations regarding the value of nature tourism in many fields of expertise, there are great gaps in the information necessary to manage the nature tourism industry.

Valentine (1990: 481), who conducted a review of research in the field, concurs with Boo's assessment and concludes:

The unfortunate reality is that we have few properly documented case studies of nature-based tourism successes or failures which may help design new ventures.

### **Problems with Nature-based Tourism (Is It Sustainable?)**

The natural environment is an important attraction for tourists (Vickerman, 1988). In particular, certain types of 'charismatic' animals have experienced a rapid growth in demand for interaction opportunities. For example, Forestell & Kaufman (1990: 401) state that:

While recognising that tourists select recreational activities that are enjoyable and attractive, we have been conscious of the awakening interest in the environment and a general fascination with wildlife, particularly whales and dolphins.

In addition to the growth in cetacean-based tourism (references include: Doak, 1988; Diederichsen, 1990; Orams, 1994; Edwards, 1988; Forestell & Kaufman, 1990; Dowling, 1992; Baxter, 1993) many other large, accessible and 'exciting' animals have become the focus of tourism operations. Animals such as the West Indian Manatee in Florida (Shackley, 1990), Potato Cod on the Great Barrier Reef (Alder, 1994) and various other fish species (Stevens, 1986), Whale Sharks on Ningaloo Reef in Western Australia (Coughran, 1993), Australasian Gannets at Muriwai, Auckland, New Zealand (Auckland Regional Council, 1988), Fairy Penguins at Phillip Island, Victoria (O'Neill & Smith, 1993) and sea turtles at Mon Repos, Queensland (Fitzsimmons & Tucker, 1993) are but a few examples of fauna which have all become popular target species for non-consumptive (but not necessarily non-destructive) tourism.

Many authors are expressing concern over the potential impacts of these kinds of interactions. For example Shackley, (1990: 313) states that:

In the height of the manatee season, the density of divers in the estuarine

waters can reach  $1/10\text{m}^2$  and, despite manatee harassment legislation, many will pet, stroke and attempt to ride the animals.

He concludes his review of manatee-related tourism by stating that, 'anyone who wants to ensure the survival of the species would be well advised to avoid visiting them'. (Shackley, 1990:316). Similarly, Forestell & Kaufman (1990) report intense interest in whale-watching in Hawaii:

A survey of major operators indicates that an estimated 130,000 people actually went whale-watching during the 1990 season, with approximately 110,000 going whale-watching from Maui alone. (Forestell & Kaufman, 1990: 401)

They also report similar concerns regarding the impact of such high levels of visitation. 'Concern has grown in every quarter that the cumulative effect of this activity may threaten the recovery and survival of this endangered species' (Forestell & Kaufman, 1990: 401).

The above examples illustrate a growing concern over the impacts of tourist interaction with the natural environment and the possible disruption to natural processes. A number of authors question the ability of any 'ecotourism' venture to conform to Valentine's definition. For example, Zell (1992: 31) states:

Tourism creates more tourism, the location becomes well known and thus desirable creating demand, more supply and ultimately destruction of the original reason for going there.

Despite many countries and agencies looking towards nature-based tourism as an answer to both economic and conservation objectives (Boo, 1990) many remain unconvinced that such ventures are a panacea that both protects the environment and supports economic activity (Pearce, 1989). Considerable debate exists, therefore, over whether nature-based tourism can be sustainable and what management regimes/strategies can be employed to minimise the negative impacts which are associated with anthropogenic influences on natural ecosystems.

## **Overview of Management Techniques**

The techniques which have traditionally been utilised to manage recreational use of natural areas can be divided into three main categories. First, physical controls in the form of barriers, paths, boardwalks, and the location of facilities are used to influence visitor behaviour. Visitor impacts are thereby reduced by physically separating them from the natural environment or by influencing the spatial distribution of use in order to protect sensitive areas.

Second, direct controls in the form of rules, regulations, permits and charges are often imposed and enforced in order to prohibit or restrict human behaviour which may be detrimental to the natural environment. Examples of direct controls include: banning certain activities; setting speed limits; requiring permits; closing areas and enforcing these controls with fines; forced removal from an area; banning future entry; and arrests and prosecutions.

Third, indirect mechanisms which seek to reduce inappropriate behaviour on

a voluntary basis through education are being increasingly utilised. These kinds of environmental education programmes are termed 'interpretation' and were first widely advocated by Tilden (1957). He defined interpretation as:

An educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information.

The use of interpretation has become a widespread management technique in the park management profession (Sharpe, 1982) and is now a specialist subject within many natural resource management disciplines (Knudson, Cable & Beck, 1995; Ham, 1992).

### **The Case for Interpretation-based Management Strategies**

Numerous examples of interpretation programmes on the natural environment show that they not only help to protect the environment but that they also increase visitor enjoyment (Alcock, 1991; Jelinek, 1990; Beckmann, 1988). Interpretation is therefore seen as a 'win-win' situation for environmental managers and tourists (Forestell, 1990).

Parks, protected natural areas and private sector, nature-based tourism operations have primarily managed tourist use of the natural environment on the basis of the first two management categories (Orams, 1996). However, the role of interpretation as an effective management strategy is seen as being increasingly important:

Environmental education is no longer a frill or a luxury. It is an essential management function for every park, recreation area, and refuge to undertake. (Herbst, 1979: 2)

Kerr (1991: 34) agrees and states that:

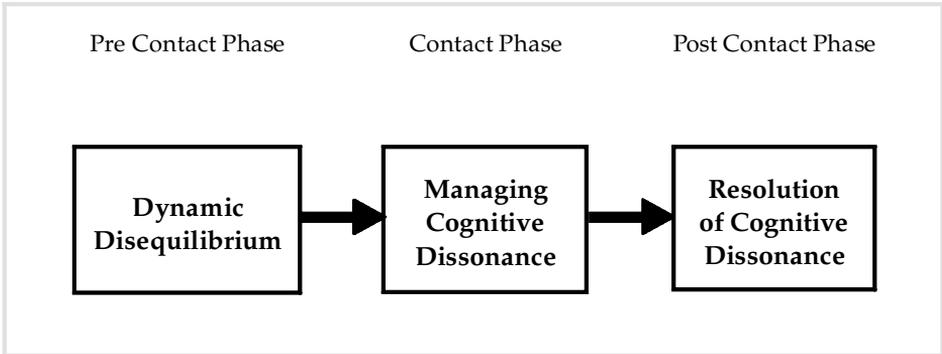
The continuing challenge is to provide opportunities for wildlife oriented recreation that preserve ecosystem integrity. Each cautious experiment helps to better define the limits of what is possible. Much of recreational demand will have to be satisfied through environmental education and interpretation.

Traditionally, interpretation programmes have been carried out by governmental resource management agencies such as park and reserves departments, forestry and land management bureaus. However, more recently, private operators and tourist resorts have recognised the importance of interpretation techniques in responding to the needs of nature-oriented tourists and protecting the attractions they wish to visit (Travelweek, 1992).

Despite this expanding support for interpretation as a management technique there is little empirical research which assesses the effectiveness of such strategies (Beckmann, 1989). There is a need to conduct studies of the use of various types of educational programmes in order to analyse successful and unsuccessful efforts and subsequently to establish general guidelines which can assist management in designing and implementing such programmes.

## The Forestell and Kaufman Model

A basis for the design and testing of interpretation programmes is proposed by Forestell & Kaufman (1990) and developed in more detail by Orams (1994). As a result of a review of cognitive psychological theory and the study of whale-watchers in Hawaii, Forestell & Kaufman conclude that an effective interpretation programme for marine wildlife has three main stages. Figure 1 illustrates these stages.

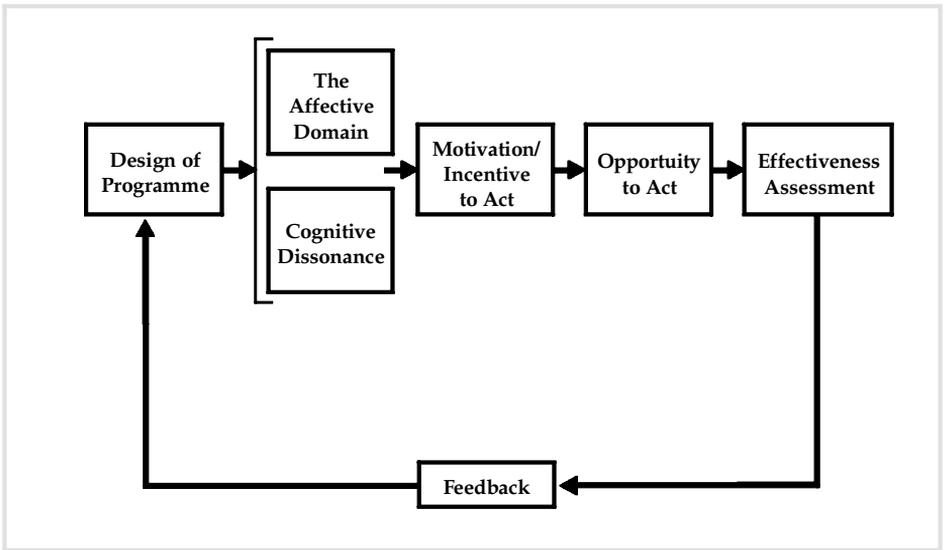


**Figure 1** Forestell and Kaufman's interpretation model

It is worthwhile to briefly summarise this model as it is one of the few to be developed from field experiences with nature-based tourists. The authors argue that, in the first instance, 'dynamic disequilibrium' should be created or promoted. This simply stated, involves creating a perceived need for information in the tourist and thereby a motivation to learn. The intention of this stage of the model is to create questions in the mind of the tourist rather than answer them. Forestell & Kaufman advocate that this strategy should be adopted prior to tourist contact with the natural attraction/s being visited.

During the tourists' contact with nature, the 'cognitive dissonance' (see below for a more detailed discussion of this concept) created during the pre-contact phase needs to be managed. That is, the needed information should be provided in an informed and interesting manner and should be relevant to what the tourist is observing and experiencing. Finally, the 'resolution of cognitive dissonance' should be facilitated. This involves follow-up activities which help participants incorporate the new information into changed behaviour.

The general features outlined by Forestell & Kaufman (1990), although simplistic, can form a basic structure from which a situation-specific interpretation programme can be developed. However, not all nature-based tourism situations lend themselves to a pre-contact, contact, post-contact format. In addition, a review of the literature on the psychology of learning reveals that the relationship between information assimilation, attitude change and behaviour change is a complex one (Orams, 1994). Stated simply, increased information, no matter how good the quality, does not necessarily lead to individuals changing their behaviour (Fishbein & Ajzen, 1975). Yet, if environmental interpretation programmes are unable to change/manage behaviour, they are of questionable benefit in managing tourist-nature interaction. It is important, therefore, that we



**Figure 2** Interpretation techniques (features of an effective interpretation programme)

establish how interpretation can best be made effective. A number of techniques may assist in this aim. These techniques are represented in Figure 2 and discussed below.

### Developing Effective Interpretation Programmes

Because interpretation is an education-based management strategy, much of the research and theory associated with education and learning is relevant in developing effective environmental interpretation programmes. In order to design an effective programme it is necessary to understand the process of learning so that the interpretation successfully targets those mental processes that are involved in human learning. An associated issue lies in understanding the precursors to human behaviour. Because one of the aims of interpretation is to alter human behaviour, the intermediate steps of knowledge acquisition, attitude development, motivation and intention to act must be examined. Through understanding these processes, strategies can be designed which reflect the complexities of the human mind and the diversity of human behaviour.

Many interpretive strategies are based upon a simplistic premise that the provision of information will cause knowledge to be accumulated and subsequently behaviour to change (Orams, 1994). The discipline of cognitive psychology and empirical research in the field refutes this assumption.

Cognition is the process of thinking and knowing. It involves our reception of sensory information, the transformation of that information, its storage, recovery and use (Neisser, 1967). Cognition is, therefore, about how people use information from their environment and their memories to make decisions about their actions. One of the major contributors to cognitive theories is Swiss psychologist Jean Piaget (1970). Piaget argues that the human mind builds cognitive structures to take external sensory input, to interpret it, transform and organise it. An

individual and the environment are engaged in a continuous interaction which leads to new perceptions and new knowledge. The ideas of change and adaptation are, therefore, central to Piaget's theory of cognitive learning. His term for the thinking structures that evolve for dealing with particular situations is 'schemes'. 'Knowledge' consists of a system of these schemes.

Adaptation is, according to Piaget, how we learn and it consists of two processes. The first of these processes is 'assimilation'. Assimilation occurs when new information is interpreted so that it is consistent with existing schemes. The second process is 'accommodation'. This occurs when new information causes a modification of the existing scheme so that it is consistent with new information, presumably because the new information is so different and has sufficient credibility that it cannot be assimilated. The two processes work against one another as new information is received and the individual searches for 'equilibrium'. Equilibrium is achieved when a person is able to operate on an assimilation basis and until the volume or weight of evidence is such that it creates 'dis-equilibrium' and accommodation occurs. Cognitive development (learning) occurs through alternating states of dis-equilibrium and equilibrium.

An additional cognitive learning theory is provided by Bloom *et al.* (1956) who developed a six-scale taxonomy describing the way people learn. They argue that people progress up a learning scale from routine tasks, such as memory accumulation, to more complex tasks such as analysis and evaluation. Further theories are provided by Neisser (1976): Cognitive Map Theory, Hart (1983): Proster Theory and Muuss (1982): Social Cognition Theory. There are, therefore, several additional theories which have expanded upon Piaget's work. However, Piaget remains the most commonly discussed theorist with regard to learning theories and environmental education (Knudson *et al.*, 1995). An additional cognitive learning theory which is worthy of discussing in more depth is that of 'cognitive dissonance'.

### **The theory of cognitive dissonance**

Festinger (1957) proposed a theory which built on Piaget's work and which has been widely discussed in the field of cognitive psychology. The theory describes the learning process in terms of the relationships between different cognitive elements. Central concepts of the theory are termed 'dissonance, consonance and irrelevance'. An individual's perception of two elements are in consonance if they are consistent or supportive of one another. For example the statement, 'I don't litter' is consonant with the statement, 'I know litter has a negative impact on the environment'. Two elements are dissonant if they are in disagreement or are inconsistent, for example, 'I do litter' and 'I know litter has a negative impact on the environment'. An element that has no relationship with and has no affect on another is termed irrelevant.

The central hypothesis of Festinger's theory is that:

The existence of dissonance, being psychologically uncomfortable, will motivate a person to try to reduce the dissonance and achieve consonance. (Festinger, 1957: 3)

There are, according to the theory, four basic situations which cause cognitive

dissonance, disagreement with others, forced compliance, decision making and exposure to dissonant information. It is this exposure to dissonant information which may be useful in environmental interpretation. If an education programme is designed to deliver information which is counter to an individual's current belief system, cognitive dissonance will arise. The psychological tension that results will motivate the individual to change his/her beliefs so that they are consonant with the new information.

The theory argues that the 'greater the magnitude of dissonance, the greater the expected change in belief' (Fishbein & Ajzen, 1975: 128). However, others point out the limitations of this assertion. Sherif *et al.* (1965) argue that there is a latitude of rejection beyond which dissonance will have no effect on belief and attitude change. This is because the new dissonant information will be of such magnitude that 'selective perception' will be employed and the new information will be discounted or rationalised so that it remains consonant. In applying Sherif *et al.*'s concept and the theory of cognitive dissonance to marketing, Engel *et al.* (1973: 329) state that:

Advertisements should deviate as far as possible from a subject's own position, thereby generating dissonance while, at the same time, staying within the latitude of acceptance.

This assertion is equally applicable to the environmental education/interpretation scenario.

The idea of challenging people's current belief systems and knowledge structures through cognitive dissonance to induce learning is not new. However, its application to an environmental interpretation setting is. An interpretation programme should attempt to 'throw people off balance' a little by deliberately attempting to create questions in participants' minds. People should find themselves asking why, how and when questions. The interpretation programme can actually lay out specific questions and leave participants to ponder the answer. For example, when observing dolphins and discussing themes associated with the biology of mammals, interpretation material (or an interpreter) might ask: 'We all know that one of the characteristics of mammals is that we all have hair, right? Think about it, dogs, cats, cows, horses, monkeys, kangaroos, they all have hair. Well, have a very close look at these dolphins, can you see any hair on them?' This kind of technique immediately involves people, they are no longer just observers, but are now active participants, looking closely at the animal to try and resolve the dissonance and achieve equilibrium. (The answer is that dolphins only have hair when they are first born, a row of whiskers on their rostrum).

### **The affective domain**

Environmental educators have emphasised the importance of the 'affective domain' in shaping an individual's thinking process. Eiss & Harbeck (1969), who developed the concept, describe the affective domain as that part of human thinking that includes attitudes, feelings, emotions and value systems. They argue that:

The affective domain is central to every part of the learning and evaluation

process ... It includes values and value systems that provide the basis for continued learning and for most of an individual's overt behaviour. It provides the bridge between the stimulus and the cognitive and psychomotor aspects of an individual's personality. (Eiss & Harbeck, 1969: 4)

The idea that emotions and value systems, as well as knowledge, shape behaviour is well supported in the literature (Dewey, 1933; Eiss & Harbeck, 1969; Iozzi, 1989). As a result, it is argued that the attention given to cognitive development in education programmes should be balanced with effort on the affective domain:

Thus it would seem that cognitive and affective factors should be considered holistically in the teaching and learning process. In practice, however, such an approach is the exception rather than the rule. (Iozzi, 1989: 3)

Iozzi goes on to summarise the research in the environmental education field that is relevant to the affective domain and finds that effective environmental education programmes concentrate on both the affective and cognitive domains. He emphasises that increasing knowledge alone will not significantly change attitudes and values. As a result, he argues that activities specifically designed to change attitudes must be included in environmental education.

The affective domain is particularly relevant in nature-based tourism because of the emotional responses that such interaction with nature engenders. It is likely that emotional involvement of interpretation programme participants is an effective 'short-cut' to inducing behaviour change. With regard to nature-based interpretive programmes, issues which involve humans' affective domain are likely to be those issues that are central to all life. Topics such as reproduction, birth, death, competition and conflict, sickness and social relationships are emotional areas for most humans. Therefore, interest and emotional response to other living things struggling with these same issues is likely.

### **Motivation/Incentive to act**

The affective domain and cognitive dissonance can be effective techniques in increasing knowledge. However, it has been shown that the link between knowledge and behaviour change is weak (Fishbein & Ajzen, 1975). Interpretation cannot force people to change their behaviour, rather it seeks to persuade voluntary behaviour change; therefore, some authors consider that the aims of interpretation should be no more ambitious than simply increasing knowledge and understanding (Hammit, 1984). However, if interpretation is to be an effective technique in managing tourist-nature interaction it should do more than this: it should prompt behaviour change (Orams, 1994). At a basic level, interpretation should seek to manage people's behaviour so that the way they behave is respectful of the potential impact their actions may have on the environment.

In order to prompt behaviour change, tourists must be convinced of the reasons why they should change. Providing examples of human activities that are harming the environment is an important mechanism for creating behaviour change motivation. The idea that 'we can do something about these problems'

and 'we can make a difference' are critical messages which should form a central part of interpretation programmes.

### Opportunity to act

The opportunity for people to act upon the motivation created in the previous section is likely to be a critical element of an interpretation programme which actually results in participant behaviour change. Few existing models recognise this factor. For example, Hines (1986) and Hungerford & Volk (1990) see the 'intention to act' as being the penultimate variable which influences behaviour change. However, it appears logical that, even if an intention to act exists, if there is no opportunity to do so, action or behaviour change will not occur.

Interpretation programmes can provide activities and materials which give participants an opportunity to act. For example, an interpretation programme may include such things as beach clean-up exercises, or data gathering for research projects. An interpreter may have a petition for participants to sign, or membership application forms for environmental organisations. Environmentally friendly products can be made available for people to buy (paper recycling kits, composting bins) and lists outlining changes that people can make at home to help reduce waste and other actions which help to protect the natural environment. All these are examples of opportunities for individuals to take action and become more environmentally responsible. This variable is extremely important, most participants in nature-oriented tourism have good intentions — they wish to be environmentally responsible. However, after they leave, those intentions may not result in changed behaviour. By providing opportunities for participants to take action as part of an interpretation programme, effective behaviour change can be prompted 'on the spot'.

### Evaluation and feedback

A critical component of any model is an assessment of its effectiveness and a feedback of the results of this assessment into the planning for the programme. A wide variety of social science techniques are applicable to assess an interpretation programme. Some combination of observation, interviews or questionnaires should be used to assess the impact of the interpretive programme on participants. In particular, some type of follow-up several months after participants leave the programme is important in order to evaluate longer-term effects.

### Applying the Model

Several publications have developed planning frameworks for interpretation (for example, Knudson *et al.*, 1995; Ham, 1992; Sharpe, 1982). A number of these approaches can be utilised in developing an interpretive programme which incorporates the model which has been offered in this paper. It is suggested that the following general approach be used to apply the model to a particular tourism management situation:

- (1) Establish the specific objectives of programme (examples include: reducing inappropriate or damaging tourist behaviour on site, prompting environ-

- mentally responsible behaviour longer term, i.e. after the tourists have returned home, and producing financial support for the tourist attraction).
- (2) Select the specific themes or messages that the programme seeks to impart, so that the tourists leave with several specific messages regarding their experience (examples include: leaving designated trails accelerates erosion, lights and loud noises can disturb the critical nesting phase of endangered sea turtles, buying dolphin-safe tuna reduces dolphin mortality in the tuna fishery, and the recovery of endangered Florida panthers is dependent on increased funding for research and rehabilitation programmes).
  - (3) Select the specific techniques (media) that will be appropriate in the specific tourism situation (examples include: presentations, brochures, self-guided trails, interactive computers, videos, activities and games, signs, displays and exhibits).
  - (4) Build in the features of the interpretive model outlined in Figure 2 (explained in detail above).
  - (5) Design a feedback-testing mechanism to assess the effectiveness of the programme (examples include: a suggestion/complaint box, visitor comment cards, questionnaires, a periodic-structured research exercise).
  - (6) Utilise the information from (5) to improve the interpretive programme.

This basic outline can be a starting point for tourism operators who wish to develop an interpretive programme for their clients. However, in developing the details of such a programme the reader is referred to the Knudson *et al.* (1995) and Ham (1992) texts, both of which have particularly good chapters on interpretation planning and implementation.

## Conclusions

The argument put forward in this paper, that interpretation may be an effective mechanism for managing nature-based tourism, is ambitious. The reality of rapidly increasing tourist numbers in natural settings causes some authors to caution that 'education and self-regulation, whilst essential, is rarely sufficient to achieve appropriate standards' (Burgess, 1992: 92). Others are more candid in their assessment of the potential of education: 'Education is seen by many as the way forward for nurturing a "better" tourism. Dream on.' (Wheeller, 1994: 9). However, whilst understanding the reason for this cynicism, it would be inappropriate to discount interpretation as a possible solution to managing nature-based tourism without having sufficient empirical evidence to do so. With regard to the management of nature-based tourism, this statement of Plimmer's (1992: 125) is pertinent:

So, we have a wide range of management techniques. We can add to them as we realise the possibilities. It is essential that we look at all these possible techniques as a menu, and choose the one, or combination, best suited to the situation.

This pragmatic view is backed by the comments of Ceballos-Lascurain (1993) who argues that managing ecotourism requires a multi-disciplinary approach. This paper provides a brief review of the range of management approaches which

may be a 'menu' from which specific strategies can be designed. In particular, a number of specific techniques for increasing the effectiveness of interpretation have been suggested. There have been few investigations into the effectiveness of varying management regimes. There is, therefore, a need to establish the most successful management techniques which protect ecosystems and allow for tourist interaction. More specifically, the following questions are worthy of investigation:

- Can nature-based tourism be non-degrading, non-damaging and sustainable?
- What strategies are appropriate/successful in managing tourism in natural settings?
- How can a successful nature-based tourism venture be designed and managed?

Interpretation has been advocated as an effective strategy in managing recreational use of the natural environment. However, this argument has not been empirically tested in nature-based tourism situations. An effective interpretation programme may be a means by which nature-based tourism can truly become 'ecotourism' as defined by Valentine (1992), that is, non-degrading, non-damaging and ultimately sustainable.

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